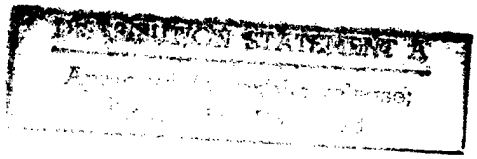
JPRS-WST-85-027

5 September 1985

West Europe Report

SCIENCE AND TECHNOLOGY



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WEST EUROPE REPORT

SCIENCE AND TECHNOLOGY

CONTENTS

TECHNOLOGY TRANSFER

AEROSPACE

CANADA PLANS 1985-86 AEROSPACE BUDGET

Paris AFP SCIENCES in French 21 Mar 85 p 17

[Unsigned article]

[Text] Ottawa--On 20 March, the Canadian government presented in Ottawa a "provisional space plan" for 1985-86 which outlines Canada's participation in the American orbital station project, and the continuation of the MSAT (telecommunication) and RADARSAT (remote sensing) satellite programs.

"A first step in the maintenance and development of Canadian capabilities in space," according to the minister of science and technology, Tom Siddon, the space plan will be followed toward the end of 1985, by "a long range strategic space plan."

Altogether, Canada will allocate 194.1 million Canadian dollars (one Canadian dollar is worth about 72.7 American cents) to space in 1985-1986, which is 30 percent more (42.9 million Canadian dollars) than in 1984-85. Of this total, 60.3 million will go to technical development, 73.5 million to remote sensing, 38.1 million to communications, and 22.2 million to space sciences.

During this year, Canada will spend 8.8 million on the design of projects for its participation in the American orbital station program.

In addition to supplying solar panels and a remote sensing installation based on RADARSAT, the Canadians plan to build a robot service module and an integrated service and test installation (ISTF) for satellite repairs.

Moreover, Canada will continue to contribute with NASA to implement the MSAT (Commercial System for Mobile Telecommunications by Satellite) program, planned for 1990. The company Telesat Canada will assume direction of this program on the Canadian side. MSAT will allow the inhabitants of rural and isolated regions to benefit from the same telecommunication advantages as those of urban areas.

Lastly, the continuation of the RADARSAT program (launched in 1981) provides the orbiting of a remote sensing satellite in the early 1990's, designed by the company Spar Aerospace, and carrying a radar equipped with an orientable beam antenna.

RADARSAT, which will move in a polar orbit and could be maintained in the orbital station, should make it possible to detect icebergs and ships, and monitor the movement of ice in the Arctic as well as crops both in Canada and throughout the world.

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CSO: 3698/597

AEROSPACE

FRG AEROSPACE COORDINATOR ON CIVIL, MILITARY, FUNDING ISSUES

Bonn WEHRTECHNIK in German Jun 85 pp 16-18, 21-23, 25

[Interview with State Secretary Martin Gruener, FRG aerospace coordinator; date and place not given: "Aerospace Is a High-Tech Field"]

> [Text] The following interview with Martin Gruener, state secretary in the FRG ministry for economics, touches on the question of government subsidies, on civilian and military R & D programs in the aerospace field, on industry utilization to full capacity and on coordination of programs within the government itself.

[Question] Could you tell us what the coordinator's job is. Does he coordinate with industry or among the various government departments ?

[Answer] I am not coordinating industry because that is not our area of responsibility. I am coordinating among the different government departments.

[Question] A few years ago, the FRG government made public an aerospace program. Has this program been updated and/or is it still valid today ?

[Answer] The basis of the aerospace program are the reports on the aerospace industry which were made public in 1982. Generally speaking, they contain the primary objectives and parameters of the FRG government. Depending on the situation, such reports are updated at regular intervals but we are not bound by a particular time schedule. At the moment, we are in fact thinking of updating the report. The reports are augmented by supplementary cabinet decisions on specific programs and/or projects.

[Question] Does the 1982 report still stand ?

[Answer] By and large it still does; but some additional aspects have come up in the meantime. That is why there is always a need for updating a report. Essentially, the update is the result of what has taken place

in the interim and of what the trends are at the time of publication, along with the declarations of intent by the government. In other words, it is a kind of balance sheet which not only tells the government where it stands but also the public. In 1982, of course, the Columbus space station and our possible participation in the Hermes program were not yet at issue. Nonetheless, we gave our approval to the Columbus program and the onward development of the Ariane project. There was no need to prepare a report on that. The cabinet reached that decision and it will subsequently be incorporated in a report.

[Question] Is the question of our taking part in the Hermes program still open ?

[Answer] Yes, it is. We have stated that we stand ready to participate in the development of the engine in the Ariane program and that is the preliminary step in the French program for manned space travel. The French are still in the initial research stage of Ariane. At the Rome conference, we were not yet able to agree to a participation in these studies.

[Question] Will the decision on SDI be postponed until publication of the next report ?

[Answer] We cannot make publication of a particular program dependent on such decisions. In the case of SDI, it is impossible to tell how long the decision-making process will take. But if and when the report is made public, these questions and the FRG government's intentions will be discussed in the light of the current state of affairs. But intentions could of course be superseded by real events. But the importance of such reports also lies in the fact that they make it incumbent on the various departments to state their wishes and then it is the job of the coordinator to fit their proposals into an overall scenario which affords the cabinet an opportunity to look at and discuss the overall financial implications.

[Question] What types of subsidies for civilian and military aerospace programs are contained in the government's aerospace program ?

[Answer] Civilian and military aviation research programs are contained in the government aviation research program. We are presently working on the 1985-1988 program.

Upon the successful completion of the A-300 and A-310 wide-body aircraft for civilian use, the aviation industry is presently developing the smaller A-320 version of the Airbus. As a further addition to the Airbus family, studies are currently underway on the TA-11, a long-distance version of the aircraft.

In the field of small, multi-purpose aircraft, Dornier has come up with the Do-228 for which there promises to be a good market. The aviation industry is currently working on improvements and onward development which may result in a pressure-impacted [?] aircraft in the long term. In the civilian helicopter field, follow-on development to the Bo-105 is presently under way.

In military aviation, the major programs going on at this time are the antitank helicopter No 2 and the fighter aircraft 90. For this reason, the FRG government is hoping that there will be a quick decision on five-sided participation in the fighter 90 project. The efforts of the equipment industry to secure appropriate participation are being supported.

In the engine field, German industry is taking part in the worldwide consortium engaged in developing the V2500 engine for the A-320 Airbus version in addition to its ongoing civilian and military programs. Another military aircraft engine is in the planning stage in connection with the fighter 90.

The current fourth space program of the FRG government was amended on the basis of a cabinet resolution of 16 January 1985 which called for a 38 percent FRG participation in the European development program of elements designated as Columbus which are to be part of the American space station and the development of the HM 60 cryogenic engine to power the V version of Ariane. At the ministerial level meeting of the ESA council, the various national positions with regard to the ESA program for the years to come were summarized and adopted. In addition to major projects, e.g. Columbus, HM 60/Ariane V, the meeting agreed on a substantial intensification of the scientific program.

[Question] Exactly how are the subsidies for the civilian aerospace industry administered by your ministry and the ministry for research and technology ?

[Answer] In principle, support for civilian aerospace activities is handled by the ministry for research and technology. Support of civil aviation by the ministry for economics is restricted to the development and production of civilian aircraft, engine and helicopter projects. Out of our budget we disburse partially refundable subsidies of up to 60 percent of the development costs for aircraft and engines. In the case of major international undertakings where the industry cannot raise enough capital of its own, this rate may be exceeded.

[Question] Is there any fixed limit ?

[Answer] No, it is decided on a case-by-case basis. Repayment of the subsidy is regularly tied to sales volume.

For the Airbus program, the government provides subsidies to finance sales to help avoid an Airbus disadvantage vis-a-vis its American competition whose sales are government-subsidized by the Export-Import Bank for example. But our government is working for an agreement on the international level with the aim of doing away with subsidies to promote sales of civilian aircraft.

[Question] Now that you have told us about the support given to civilian aircraft production by the ministry for economics, what about the support given by the ministry for research and technology to civil aviation research ?

[Answer] That program provides its share to German aerospace research projects and other technological research as a first step to future projects. The ministry also subsidizes major investment projects, e.g. the European transonic wind tunnel and an engine high-altitude test stand. It spent about DM 170 million on these programs in 1985.

[Question] The ministry for research and technology also provides subsidies to the space program. How much does it spend on that ?

[Answer] I have already mentioned our government's support for the Columbus and HM 60/Ariane 5 projects. By providing this support, the government means to affirm its willingness to continue to push the development of the space program, viewing it as an important high-technology field. But the government will also be seeing to it that industry for its part makes an effort to market internationally competitive products based on the know-how obtained from the public sector development contracts. In 1985, the ministry for research and technology is spending about DM 800 million on the space program, which includes some DM 400 million for our share of the ESA programs. Based on the funds required for the Columbus and Ariane projects, we will have to provide about DM 1.2 billion in the medium term.

[Question] Who decides which projects will be subsidized ? Are job policy considerations a factor ?

[Answer] We make the decisions and they are based on the economic prospects of a given project. Industry presents its projects to us and we choose among them. In civil aviation projects, our decisions were based on various considerations. We started out with the recognition that no individual nation in Europe could hope to compete with the American civil aviation industry even though an extremely efficient British and French aerospace industry already existed at the time. The second consideration was how to achieve utilization of the industry at full capacity in order to strike a more effective balance between defense programs and civilian

programs. The third consideration was to carry out a civilian project of this kind as a joint European effort. We were clear in our minds from the start that any such civilian cooperative effort could not succeed without government assistance--which meant in effect that government subsidies for civil aviation would be provided come what may. There is whole series of such programs: the Do-228, the Bo-105, the VFW 614, the HBF 320 and a partnership in the Dutch F-27 and F-28. Unfortunately, some of these were not successful. As a rule, we first had thorough discussions with industry and then the cabinet reached its decision. But even if a project was discontinued, we were always involved in the consultations.

I must say, however, that a huge program like the Airbus has an impact on other programs as well. There are a good many interesting proposals we cannot pursue because of this. That may be unjust toward the smaller projects; but that is all there is, there isn't any more. The development of the Airbus has placed quite a strain on us, since we could not realize at the outset that we would wind up building an entire family of aircraft.

[Question] What other civilian projects are being subsidized at this time in addition to Airbus ? The Dornier-228 and what else ?

[Answer] We are collaborating with Fokker on the F-100. Part of the German share is being provided by Lower Saxony. In addition, we are subsidizing the engines at MTU, e.g. the 2037 as well as the helicopters.

[Question] What is the extent of the equipment industry's participation in these programs ?

[Answer] It depends on the number of orders it gets from the main contractor. In the Airbus case, for instance, the MBB company makes the decision on what it needs in terms of equipment for its part of the project. The manufacturers must then enter bids. Of course, the German equipment manufacturers are also afforded an opportunity to supply the French or English contractors. From a political point of view, we are vitally interested in having as many equipment manufacturers participate as possible. This is why the ministry for economics, in providing the subsidies to MBB, attached some "appropriate," though not legally binding conditions which motivated MBB to give preference to German suppliers. We set forth our views to the Airbus Industry, making sure that any discrimination against German suppliers was discussed at the political level in order not to run the risk that decisions were reached elsewhere under less than objective circumstances.

[Question] In the case of the A-320 program, a determined effort was made to secure an appropriate 30 percent share for German suppliers. What is the current status of that ?

[Answer] I cannot give you a definite answer on that because some decisions have not yet been made; but we do expect to get the 30 percent. This figure refers to the share of series production. If one factors in the development costs, the actual figure should be closer to 25 percent. But that in itself is a big gain over the past and is in excess of our somewhat skeptical expectations. But it is also attributable to the greater efficiency of our supply firms.

It is important for our partners to know that the FRG lays stress on the fact that our equipment industry be provided with orders commensurate with our financial contribution. But that is only one argument among many. Some German suppliers have also made increased efforts to participate in projects assigned to France and England. As far as England is concerned, we have been totally unsuccessful. The German share of the equipment industry supplying the Airbus family has been rising consistently and rapidly. Between the A-300 and the A-310, it rose from virtually zero to 17 percent and from there to the A-320, from 17 to 25 percent--in relation to development costs, as I said before.

[Question] How do you expect the Airbus family to develop from here on ?

[Answer] We consider the expansion of the Airbus family unavoidable--which is also why we moved on to the A-320. As before, we are convinced that this expansion should proceed and that the Airbus Industry partners should agree on this expansion program. Now this assumes that they are able to make a positive evaluation of the marketing opportunities and that they can handle the entire package in terms of their financial obligations and technical capabilities.

[Question] What about the TA-11 long-distance version ? Do you support that project ?

[Answer] In principle we are not opposed to it--but with the proviso that the industry actually puts the proposal on the table; that it agrees on the particulars and that it submits reliable sales forecasts which prove that such a program would be economically feasible. This, in our view, would include actual orders from airline companies. None of this has happened thus far. In the case of the A-320 we also set the condition that a certain number of orders and options would have to be obtained before the green light was given.

[Question] How do you coordinate cooperative ventures with your counterparts in other countries ?

[Answer] The aviation industry in Europe is one of those fiels where national sovereignty no longer represents an alternative. Under the circumstances, there must be coordination whenever a government is in-

volved. In the field of military technology, there is close coordination in international programs between the government contracting authorities (purchasers) who place the orders and make the payments and then get what they ordered. The question of sales does not enter into it as in the case of the civilian sector. There, we have equally close contact at the government level. But there are different types of subsidy systems in the different countries which in specific instances are not so easy to see through. They have developed in different ways; but coordination is extremely close in any event. Like our English and French colleagues, the biggest problem we face is that of evaluating the market for the A-320. It is worth noting, for that matter, that the Airbus program started out in 1969 as a bilateral Franco-German project and has since developed into a multilateral, cooperative enterprise in which virtually all EC member nations which have an aerospace industry, with the exception of Italy, are presently participating.

[Question] What priority would you give to the aerospace industry with regard to subsidizing the technology—or rather, high technology ?

[Answer] From the technical point of view, the aerospace program has a very high priority. One must make a distinction, however, between the development and production of a civilian and a military aircraft. In the first instance, I would not rate the significance of technology quite as high although there are certain developments in the field of civil aviation which do not apply in military projects and should therefore be rated on their own merits. The space program, on the other hand, is always calling for designs which go beyond anything that went before and the limiting conditions are set by satellites for example which operate automatically in space for years or by weightlessness and cosmic radiation.

The uses to be made of the new aerospace technologies are very different. In the first instance, they serve to promote onward development of conventional products. Transfer of technologies to other fields is relatively difficult to gauge or can only be measured on the basis of specific examples. But they are characterized by their variety. Let me cite a few examples:

+ improvement of aerodynamics in rapid transit systems, automobiles, wind energy equipment, ship hulls, etc.
+ use of lightweight construction materials (coal fiber-reinforced materials for use of ultra-lightweight automobile parts, rail vehicle construction, solar panels, etc.)
+ rocket engine chamber systems for use in oil burners;

+ improved materials in specialized mechanical engineering;
+ high-reliability video display information systems to monitor complex control systems, e.g. power plants, etc.
+ transfer of physical know-how acquired in aviation to other fields, e.g. medicine; think of the kidney stone smasher.

It is easier to come up with examples of how space technology can benefit other fields. Modern, satellite-based communication systems, for example, can be further developed in other sectors of industry. In that regard, space technology is closely tied to microelectronics in the sense that modern satellites called for the development of lightweight, highly integrated circuits which had not been in use in other fields. These, in turn, brought about rapid development in robot technology.

As a sequel to the Spacelab experiments we might mention the cultivation of crystals, the production of new alloys and new production processes. At the same time, the construction of the space station itself provides new impulses for more complex systems management as well as the application of new intelligent automation systems.

[Question] There has been some criticism in the past regarding the coordination of subsidy programs for military R & D as between the ministries for economics, for research and technology and defense. Has coordination improved in the meantime ?

[Answer] I am not aware of any such criticism. But I do not wish to rule out the possibility of something like this happening because the fact is of course that military requirements tend to predominate in defense ministry thinking with regard to subsidy programs. This can also result in differences of opinion with the user but there is very little the minister for economics can do about that. We introduce a new aspect into discussions of this sort, e.g. the technological significance of a given project. The military tend to look at things quite differently: they want to know whether it is the type of technology that can be useful in terms of military security. Many of these developments are of the kind that cannot be handled either by our ministry or by the ministry of research and technology. In the field of research, there is coordination between the three ministries.

In any event, for every DM we spend on R & D, we get six DM back, which makes those expenditures more cost-effective than the ones for hardware. This is why we support the defense minister on all those projects which involve new technology because every DM spent in that field is money well

spent in terms of economic policy and technology whereas military hardware, as important as it is from a security point of view, is of no practical use to the economy; but it is necessary in order to keep the worst case scenario from happening.

[Question] Now how does coordination on R & D subsidy programs actually work between the various ministries ?

[Answer] To coordinate programs on an inter-ministry basis, we have established committees ranging from working-level groups all the way to the state secretary for aerospace committee. In the research field, for example, i.e. in working out subsidy programs for preliminary stage projects by the defense ministry and civil aviation research by the research and technology ministry, there is close coordination with the ministry for economics with a view toward subsequent subsidies for the development of civilian aircraft projects.

[Question] Is there an overall plan for the coordination among the various ministries ?

[Answer] My office is responsible for that; but there was something like it before as well. But things being as they are, there always are conflicts of interest, as there must be. We, for instance, do not make an evaluation of the military aspects of an issue. We present different sets of ideas based on our point of view.

[Question] The military projects such as Fighter 90 and PAH-2 are supposed to be large-scale, international projects. How far does your personal influence with the ministersgo ? After all, these are economic issues also, e.g. do we develop these items on our own; do we build them on the basis of licensing agreements or do we buy them outright ?

[Answer] With regard to the Fighter 90, I had a personal conversation with the minister and that is also what usually happens in the case of other projects of some magnitude. Now whether I was able to influence the minister in his decision on these multilateral problems I cannot really say.

[Question] As far as we know, there are plans to build a civilian version of the PAH-2, too. You will surely be asked to subsidize that project, too, won't you ?

[Answer] Industry did come up with plans for a civilian version. In the case of the PAH-1 some time ago, it was exactly the other way around. In the case of the PAH-2, a market survey has not yet been done; but the components could be used to build a transport helicopter.

[Question] If the defense minister should ask the finance minister to provide the approximately DM 1 billion needed to develop the PAH-2, will you support him ?

[Answer] The coordinator does not have any real power and he does not have a fund to draw on for the disbursement of money. But it is always a negotiating point to assure oneself of the support of the minister for economics when a project is about to come up in the cabinet. The same thing applies to the civilian sector, of course. The minister of research and technology, for instance, also looked to the minister for economics to support him on the Columbus project.

[Question] The same procedure would apply in the case of SDI as well then ?

[Answer] The appropriate departments of the foreign ministry and the ministry of research and technology have been working on this problem for some time now and at some later date they will be approaching the minister for economics and the finance minister. That is normal. First, a project is worked out by the departments concerned and then one goes looking for support elsewhere.

[Question] In other words, there is no immediate way one could gauge your support of specific military projects—or only in the preparatory stage ?

[Answer] In the final analysis, it is the voice of the minister of economics that counts in the cabinet session—additionally enhanced by the weight attached to the coordinator's function.

[Question] What do you think the chances are of paying for the Fighter 90 ?

[Answer] The joint study to work out a firm proposal which was commissioned by the five nations' defense ministers in the fall of 1984 has not yet produced any clear results. In view of the different interests of the participating countries there has been no agreement so far on when and how to start joint development. Defense Minister Woerner has said, however, that a decision will have to be made this summer. So far, we have earmarked about DM 1.1 billion to pay for partial development costs. These funds are part of the medium-term financial plan but are being held in escrow for the time being. At the moment, we are in the process of releasing DM 120 million for 1985 to pay for the startup program. On this matter, too, there has been close coordination between the departments concerned.

[Question] Could you give us your assessment of the operating rate of the German aerospace industry with regard to R & D, production and maintenance ?

[Answer] The FRG aerospace industry currently employs about 70,000 people. The operating rate in the three areas you have mentioned tends to vary. We are worried, of course, about how to plug the gap that is opening up now that the Tornado project is winding down and this also applies to civilian projects such as Airbus. This development really does worry us. In the development field, on the other hand, we are doing quite well as long as the PAH-2 works out according to plan and if we get the Fighter 90, the space projects, the drones and the missiles into production. But we must also realize that we have significantly cut back in the development field in comparison to previous years.

We must also take note of the fact that there has been a shift occasioned by the increasing importance of electronics. Now as for maintenance, the very quality of the products, the greater reliability and the fact that many of them are maintenance-free has something of an adverse effect on industry. In addition, the air force now has its own maintenance facilities and we will have to see to it that if there is a reduction in the number of such facilities that this will proceed at the same rate in the case of both the air force and the civilian facilities.

[Question] The equipment industry is also affected once the airframe manufacturers start encroaching upon the equipment sector at the expense of the medium-sized companies. Are you staying out of this particular fracas altogether ?

[Answer] We are keeping an eye on these activities. In the civilian sector, the customers, i.e. the airlines, see to it that the airframe manufacturers do not become too active in the equipment sector.

[Question] What effect does the newly compiled Cocom list have on German industry ?

[Answer] Coordination on updating the Cocom list was not as controversial as one might think. The only thing that has changed is the commitment of the Americans themselves to apply it rigorously—for the most part on the basis of already existing Cocom regulations. Essentially, Cocom is concerned with the transfer of technology from West to East and we have called on German industry in a very pointed manner to let us know whenever it feels hampered in its export activities so that we can pass that information on to the Americans in our ongoing contacts with them. But we have not been told of anything one could pinpoint as constituting a willful curtailment of technology transfer. It is more in the manner of delays based on more stringent application of the rules that acts as an obstacle. Thus we are not dealing with an outright ban but with administrative obstructions. Now that is annoying enough in itself. But the Americans are trying to remove such obstructions. The reports about the technology lag in German have done us a lot of harm

of course. Things like that are said in an offhand manner and the media treat them in the same way. We have fought a hard fight on that issue and had to tell the other participants: you have talked the Germans right out of the market. How are we to sell anything at all on the world market, if the administration or institutions such as the EC announce that European industry in general and German industry in particular is lagging behind—without being refuted. The EC, for example, used high technology statistics dating back to 1972.

[Question] Is it not necessary to counter this by increasing government subsidies ?

[Answer] No amount of subsidies will get an economy back on its feet once it has gotten caught in the rumor mill. There is no way that can be funded. Of course you cannot be number one in the world in every sector of technology. There are sectors in which one must take care not to lose contact with the rest of the field.

PHOTO CAPTIONS

1. p 18. In accordance with an FRG cabinet decision, the FRG is continuing to take part in the development of the Ariane space vehicle. France has plans for entering the manned space field with the help of Ariane 5 and the Hermes space station. The FRG has not yet announced its agreement to participate in the study phase of the program.

2. p 21. The propulsion industry, too—State Secretary Gruener mentions MTU in this connection—is receiving government subsidies. The MTM 385 engine will probably be used in the civilian version of the PAH-2, too.

3. p 22. It is the coordinator's aim to carry out civilian projects on the basis of European cooperation, too. The communications technology payloads for the five European communications satellites, for example, will be supplied by the German ANT Nachrichtentechnik [Communications Technology] company. The photograph shows work being performed in the dust-free integration chamber at the ANT plant in Backnang.

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CSO: 3698/638

AEROSPACE

NETHERLANDS CONTRIBUTION TO COLUMBUS PROJECT

Utrecht ZENIT in Dutch Jun 85 pp 205-209

[Article by D. de Hoop: "Space Stations Have a Future"]

[Excerpts] Dutch Interest in Columbus Project

The Netherlands has decided to accept a 4 to 5 percent role in ESA's [European Space Agency] Columbus definition study, which will continue until the beginning of 1987. Thus, ESA has commissioned Dutch enterprises and laboratories to define certain subsystems more closely. In the framework of both European and their own national technology programs, the Dutch have already conducted preliminary studies on systems which can serve on space stations. For example, Fokker has carried out partial studies on large solar panels (in cooperation with British and German institutions such as British Aerospace and AEG [General Electric Company]), while Fokker and the National Aeronautics and Space Laboratory (NLR) together with the German firm Dornier have received ESA assignments focusing on space station thermal control systems. Fokker and NLR have also investigated manipulating arms, robotic systems, man-machine interactions, the attitude control of flexible space station elements and their use in space stations. At present, studies of the Columbus program are continuing. Specifically, Fokker is investigating solar panels on space platforms, ventilation locks, thermal control systems, frame constructions, robotics and utility aspects, while NLR is researching data processing systems, two-phase thermal control systems and utility aspects.

Apparently, Dutch industry and laboratories are in good position to undertake a definition study of the space station. Advanced subsystems will thus be designed by Dutch enterprises, and the competitive position of the Dutch industry will improve. Small and medium-sized enterprises will also become involved. It is also very likely that Philips will deliver new compact disk systems for data storage.

Also Dutch scientists are involved in the current studies of space station facilities. For example, Dutch researchers in the universities of Nijmegen, Utrecht, Groningen and Limburg are studying biomedical facilities, while the staff of NLR, Fokker and the universities of Groningen and Amsterdam are

closely involved in examining liquid-state physics instruments [vloeistoffysica-instrumenten]. Naturally Dutch astronomers and meteorologists will use the various observatories and terrestrial observatory facilities.

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CSO: 3698/1027

AEROSPACE

CNES HEAD DISCUSSES HERMES, ARIANE PROGRAMS

Brussels LE SOIR in French 18 Jul 85 p 7

[Interview with Frederic d'Allest, general director of the CNES and president of Arianespace, by Guy Duplat; in Brussels on 12 July]

[Text] Frederic d'Allest is truly Europe's "Mr Space." General director of the CNES (the French National Center for Space Studies) and president of Arianespace, he is making great efforts to make sure that France takes off and that Europe gets into orbit. His battle horse is called "Hermes," a mini-shuttle or rather a spacecraft that should enable Europe--on its own--to send men into space within the next 10 years.

Last January, the ministers of ESA [European Space Agency] member countries, meeting in Rome, took note of the French project, but without for all that ratifying a project for over FF 100 billion, that was coming in addition to the ambitious Columbus (contribution to the U.S. orbital station) and Ariane-5 (the future super-launcher) projects. Germany in particular was very reluctant, for financial reasons.

As it turned out, Belgium was the country most eager to follow Paris along this ambitious road. Since the Rome meeting, Frederic d'Allest has taken his pilgrim's staff and undertaken a round of European capitals. Today, the wind is changing, and governments seem ready to contribute to Hermes. The CNES director was in Brussels last Friday to discuss Belgian industrial participations in Hermes. We met with him.

[Question] Hermes has a dual goal, both political and technical?

[Answer] That is true. At the ESA meeting in Rome, the ministers adopted the goal of space autonomy. Therefore, we cannot be content with just getting 15 percent of the U.S. orbital station. We must have a shuttle.

But, apart from this important political objective, we should realize that Hermes is not just another mini-shuttle. Commercial competition between the U.S. space shuttle and the Ariane rockets has clearly shown that Ariane is far more economical than the shuttle when it comes to launching any unmanned satellites. We must therefore preserve the Ariane concept for the launching of satellites and not make a shuttle designed to launch them. But we must also have a means of transport enabling us to send men into space to check satellites, bring back experiment results, etc. Hermes is a means of transporting men with their toolboxes; it is not for satellites. That was the mistake of the U.S. shuttle that it tried to be all things in one.

[Question] And what is the present status of the Hermes project?

[Answer] The concept proposed by the CNES was confirmed by the two firms, Dassault and Aerospatiale (the prime contractor will have to be appointed in September, and it will have to be one of these two). When Ariane 5 is used as a launcher, it is a very flexible system. Hermes will be able to go higher than the shuttle and to supply polar orbital stations. It will be able to stay longer in orbit (up to one month). Hermes will benefit from the technical innovations that have occurred since the U.S. shuttle was built: new equipment, advanced software, etc.

[Question] Is Hermes connected in any way with the Eureka project?

[Answer] There are no formal links, for Hermes falls clearly within the province of the European Space Agency. Hermes has its own logic, which is not that of Eureka. But, of course, some research themes included in Hermes are similar to those of Eureka; for instance, the advanced ADA software or flat-panel screens. Hermes could therefore be a remarkable testing ground for all these new technologies.

Already by 1995

[Question] The first Hermes flight was initially scheduled for 1997; it was advanced to 1995. Why this rush?

[Answer] Already next fall, we shall start the most urgent work. And in 1995, at the time of the third qualification flight of Ariane 5, Hermes will complete its first flight. If we want to go fast, it is above all in order to be consistent. Ariane 5 and Hermes form a complete system with large interfaces. We want to take advantage of the Ariane 5 test flights to qualify the manned system as a whole. But, in addition, Europe wants to build its own orbital station before the end of this century. Now, it would not be possible to deploy such a station with a spacecraft that had never flown before. This is why we had to advance the first flights.

[Question] In Rome, certain countries, including Germany, were quite reluctant. How do they feel about it today?

[Answer] I have already met with Swedish, Spanish and Italian officials. I am coming back from Germany. I can say that, everywhere, I have found a definite interest, even enthusiasm. Even in Bonn. We have gone a long way

since the Rome meeting. I would say that we find ourselves in the same situation as at the start of the Ariane program. Many countries were reluctant then, and France had to support most of the program.

Today, everyone supports Ariane.

[Question] But, are there already firm intentions to contribute to Hermes?

[Answer] We are only looking for declarations of intention. Firm commitments will wait until 1987. But Italy already indicated that it would contribute 15 percent of the project cost; Sweden is talking about 4 percent, Belgium about 5 percent, Spain about 3 percent, Switzerland about 2 percent. Germany, which was very reluctant, appears to be changing its mind. It realizes that its aeronautical industry has to contribute to Hermes. Maybe Bonn will take over 20 percent of the project.

Something to Interest the Belgians

[Question] What is the interest of the Hermes project for Belgian manufacturers? Are they not going to be mere subcontractors in a program whose strings will all be pulled from Paris?

[Answer] Belgium cannot complain about the orders it received under previous programs. In the case of Hermes, Belgium could collaborate in several fields. But it is still too early to make commitments.

I would say that the Belgian industry has adequately proved itself in the space sector to become the prime contractor for complete subsystems. I am thinking of the power distribution for Hermes. I am thinking of telecommunications, which will be especially complex since interfaces will have to be provided between the shuttle, the orbital station, ground stations, etc. Bell telephone is very competent.

For aerodynamic studies, the Von Karmann Institute seems interesting. SABCA [Belgian Aeronautical Engineering Company] could make a contribution to the hydraulic systems. Barco looks well placed to develop low-power-consumption flat-panel screens. Finally, there is a very important strategic field, that of fuel cells, in which the Elinco company could be a candidate. I would also add composite-fiber structural components. In other words, there is enough to place orders far in excess of the 5 percent Belgian participation.

9294
CSO: 3698/632

AEROSPACE

BRIEFS

AEROSPATIALE PRESENTS HERMES SIMULATOR--On 11 July, in Toulouse, Aerospatiale introduced the "EPOPEE" (Prospective Studies for the Organization of the Ergonomic Flight Compartment) flight simulator that could be used to train the crews of the "Hermes" mini-shuttle. Mr Alain Ramier, in charge of future flight-compartment construction studies at Aerospatiale, stated that "EPOPEE would make it possible to study the shuttle re-entry trajectory into the atmosphere and to assist in preparing future pilots to take control of their spacecraft for landing." "With EPOPEE, we are simulating the shuttle approach starting at an altitude of 10 km. Considering that this will be a glider, its speed will be 10 times that of an aircraft in vertical descent, so that the pilots will need special training to learn how to brake the movement of their craft by making a half-loop before aligning it with the landing strip," he indicated. Aerospatiale, which is competing with Dassault, is hoping that its "space knowhow" will be required for this project, as, according to its officials, this would enable it to "use and develop its technological capacities." [Text] [Paris AFP SCIENCES in French 18 Jul 85 p 16] 9294

CSO: 3698/632

AUTOMOBILE INDUSTRY

FIAT TO ASSEMBLE EFFICIENT ENGINE IN AUTOMATED PLANT

Turin ATA INGEGNERIA AUTOMOTORISTICA in Italian May 85 pp 364-370

[Text] Termoli 3 will be the birthplace of FIAT's Fire 1000 engine. The company has built a whole new plant for it at its Termoli complex, and named it "Termoli 3."

From the beginning it was obvious that it would be impossible to produce a radically new engine in any existing conventional production facility.

That is why FIAT decided to go back to square one, both in designing the engine and in devising and building the equipment to make it, and thus do both jobs at the same time.

The constant interchange between the engine's designers and those working on the plant led to simpler and more elegant solutions and to construction of a plant endowed with an exceptional productivity potential. The fruits of that fecund interchange were such that it is hard indeed to describe the Fire 1000 and the technical decisions that make it what it is without talking first about the Termoli complex and the manufacturing systems.

Both the engine and the plant are the offspring of a stunningly innovative design and planning philosophy.

While on the one hand there were none of the common constraints imposed by pre-existing physical plant, on the other, in the design process for the Fire 100 the team had carte blanche to call on the most advanced production techniques the world could offer.

The plant was build after the production lines were designed, and that was an enormous advantage that made it possible to set up the lines in the most efficient way and thereby achieve an optimum flow of materials to and through the plant.

The Plant

The new Termoli 3 installation covers an indoor area of some 52,000 square meters; the structure is of steel, with a shed roof. The bays measure 16x16 meters. To insure high stability the foundations were laid on pilings sunk 35 meters into the ground. This ultra-modern building was designed to provide the shortest and quickest transit of materials during production.

The plant's interior can be subdivided into an area where the mechanical operations are performed, one that houses the assembly line, and a third for the test-benches where the completed engines get their final check.

To hold down costs and to avoid having to provide the indispensable overhead protection for the various components, they opted against any big storage facilities. The flow of materials to production line and assembly line alike was planned with the most intense attention to detail. The result is, again, an innovative system.

Components are delivered as rough castings at Termoli: engine-head, block, bearings, cam-shaft, intake and exhaust systems; all these components are finished here. The other engine components are delivered finished and ready for assembly.

Every evening, a management computer is programmed for the following day's production. It decides, on the basis of expected deliveries, stocks on hand, etc., whether or not the production program can be met.

This computer controls the flow of materials, programs the machines, and arranges optimal timing for deliveries of the various components at the right time. At strategic points along the production lines are interoperational automatic stock-bins, also controlled by the computer.

Materials Movement

The patterns of materials movement were designed on the basis of maximum work-flow continuity and maximum automation.

The unfinished components are placed and secured on the main finishing lines by automatic machines.

Complex components, such as crankshafts, camshafts, etc.) are secured to pallets that carry them along the finishing lines.

The controls for the various component-handling devices are still electromechanical for reasons of speed, reliability, and simplicity in maintenance.

When the mechanical finishing is completed, the finished components are, according to need, delivered to assembly-line feed-stocks or picked up and automatically set in place on the lines themselves.

For backtracking purposes and management a sophisticated automatic system monitors the progress of each component from the finishing lines to the assembly lines.

How Quality Is Built In

The Termoli plant is unique in the world, partly because of the number of inspections each part undergoes, and of the new ways they are performed, and especially because of the quality-control system's capacity for "self-control."

On the average, every one of the engine's main components is inspected at least 15 times.

The conventional quality-control approach was to identify and discard pieces which did not meet design specifications: at Termoli they have devised a new system whose purpose is to improve the quality of the product by reducing the chances of turning out defective pieces.

On the lines, every piece is subjected to "in-process" inspections which are performed during the mechanical finishing and "post-process," or downstream from the finishing operations. "In-process" inspections are used for the more critical dimensions, and make it possible, if necessary, to make automatic corrections and adjustments.

"On-line" inspections are statistical: their frequency and the logic that governs their performance are established by the computer; in case of deviation the computer can "talk" to the machine that is performing the mechanical finishing and give it corrective instructions. If the computer does not approve its efforts, the offending machine shuts down automatically.

"Off-line" inspections are also statistical, and are performed by robots than can run extremely precise dimensional and geometrical checks on all finished part. Furthermore, with these controls, it becomes possible to pinpoint individual machines' "tendencies" and hence to spot possible deviations in the area of design tolerances stemming from unusual operating conditions, minor errors in positioning, abnormal wear on machine-tools, etc.

All the data culled from these checks are forwarded to a central computer which provides real-time alerts to possible anomalies.

"Loud signals" are warnings about possible erroneous inspection approval of parts exceeding the design tolerances.

"Soft signals" are early warnings of potentially erroneous inspection approval of parts that fail to meet design tolerances, or reports on machines that tend to alter or reduce the area of tolerance within which they operate.

Thanks to these timely alerts from the computer, experts can move in on the equipment immediately and thus prevent production of defective components.

The Management Computer System

Data from the equipment along the lines are gathered and interpreted by a special centralized system whose job is production management.

It supplies statistical data on how the lines are operating and on inventory levels, manages the plant maintenance schedules, and files the "history" of every engine that comes off the line in its memory.

That last function is made possible by means of "static memory files" enclosed in plastic sheaths (Statec) permanently attached to the pallets as they move along the various lines.

An electronic system enables each file to memorize data (such as the dimension rating of crank-shaft supports, ball-bearing housings, etc.), along with directions for machining and assembly.

Each memory stays with its own pallet and when it arrives at a new station or a new transfer-point it is "read" and gives instructions about what is happening to the machines and to the robots.

With this procedure, FIAT can consistently get perfect fit, without the slightest chance of error (all the parts coming off the machining lines are subdivided into several classes according to the number of fits they require).

The history of each motor, of the finishing undergone by each individual component in every assembly-line operation and during every bench-test is also fed into the central computer (which can, if need be, call it up again when needed).

The slightest glitch is reported in real time, thanks to the very advanced on-board diagnostic and monitoring system that stands guard over every line at Termoli 3; the causes of the malfunction and the points at which repairs or readjustments are needed are displayed on a color TV screen. The monitoring system is also used to check execution of on-line statistical controls.

The programming for replacement of machine-tools is also displayed on a TV screen.

The Production Lines

The Termoli 3 plant is divided into three major areas: one where they do the mechanical finishing, one for assembly, and one for engine testing.

There are five machining lines, where they hone the rough-cast crank-shafts, the heads, the piston rods, and the blocks, and the cam-shafts.

The assembly line has two preliminary lines: one to prep the distributor head and piston-rods, and another for engine assembly.

The engine-testing bay has 19 automatic-cycle stations and 12 pre-testing preparation stations.

Machining Operations

The hallmark of these lines is extremely high precision and a very fast work-pace.
Down-time has been drastically reduced by stepping up the pace of parts delivery and of access to the machine-tools. Processing speed improvement was made possible by resort to very advanced machining systems and to innovative machine-tools.

All operations involved in loading and unloading the lines are completely automated, with no manual handling required.

By way of example, we shall describe in detail the head-finishing line.

This is a fully automated line, some 370 meters long, and equipped with 13 transfer-points at which 99 machining phase are completed.

Prior to machine finishing, every head is measured to make certain it is properly positioned. Machines display the depth of the combustion chambers (taken directly from the casting) with reference to the engine—block and the distance between the chambers.

Next the machines find the mean line between the deeper chamber and the shallower: the maximum acceptable disparity is 0.2mm. Actual machine finishing begins with milling the upper surface, which then becomes the reference surface for subsequent operations. This done, the lower level and the lateral surfaces are smoothed, then the housings for the seats and valve-guides and those for the tappets. The valve-seat rings are hot-welded into place. Subsequent washing operations to which the engine-head is subjected are helpful in cooling the engine-head to room temperature. The guides are installed cold, and are machine-finished along with the rest of the chamber. Once the valve-seats are in place, the cam-shaft supports are sweated on.

When the finishing operations are completed, the cooling-system caps are installed and the engine is tested for leaks by a process that instantly pinpoints any leaks in welds, from cracks, and the like.

Fully finished heads are tested by sampling involving a series of dimensional and geometric checks passing through a metering station equipped with programmable automatic gauges (PMG). These, once the head has been properly positioned for examination, call up and perform no fewer than 84 checks within a few minutes, and when it has finished, prints out a report on its findings.

The major improvements achieved have to do with quality, a result of the heightened precision in finishing, the increased number of checks, and the reduction in production times. The latter was achieved thanks to total automation and carefully timed deliveries, all made possible by means of advanced machines and tools.

Assembly

Even in the design for the assembly lines the same standards applied: maximum automation and maximum work-pace.

Specifically, this involved an extremely high level of automation in activating and halting equipment and materials-flow, and in fitting and attaching the various components and, of course, extensive use of robots.

These assembly-line robots, which can move in six different directions, can perform, with astonishing precision, tasks which only yesterday men were doing. Most of them are sensorized robots, with mechanical hands that can recognized pieces by feel: in some operations, they are already testing "sighted" robots whose eyes are TV cameras.

In all, 48 robots are used on the engine-assembly lines and on the sub-assembly prep-lines.

Only a handful of operations calling for very high adaptability are still done by hand (installing drive-belts, thermostats, differentials, filters, and generators). The high productivity and remarkable flexibility that distinguish the Fire engine assembly-line are attributable in large measure to the extensive use of robots.

Assembly of sub-components like the engine-head, complete with its distributor mechanisms and connecting-rod/piston/piston-pin group is fully automated.

On the assembly-line the various major components (engine-head, engine-block) and the engine are attached to pallets equipped with static data-storage units (Statec). The flow of materials is governed by a computerized system which is also used for real-time identification of the several preparatory operations.

The system's ready convertibility enables it to adapt to any potential requirement or variation that might arise in the future.

Upon completion of each phase of assembly, a series of automatic tests is required to ascertain that all parts and components have been properly mounted and installed for operation. For example, once the block lids have been put into place, not only does the robot check, like a good mechanic, to make sure that the crankshaft can turn easily, but actually measures the torque needed to turn it. All moving parts are installed after oiling, done by automatic devices set to dispense the precise amount of oil needed.

Assembling the Engine-Head and Distributor System

Of particular interest is the assembly-line for the engine-head and distributor systems, designed to move 260 pallets equipped with Statec memory banks that communicate directly with 41 automated stations and 17 robots.

The robots install the valves, oil-baffles for the valve-guides, the clutch-cup-mushroom sub-assemblies, and the starter for the 24 slaves and the various threaded caps. The productivity gain over pre-existing assembly lines is due in very large measure to this exrobotization; the per-capita hourly output is 142/11 (by way of comparison, we would note that this ratio, for the 1300- cc is 96/42).

The Fire engine-head consists of 90 parts. Assembly starts with insertion of the valves into the guides after the latter have been properly lubricated by an automatic oiler. Then come the clutch, cups, and mushrooms.

These operations, which are not all that easy to perform even by hand, are entirely the work of robots that pick up the components from their containers, crimp them, and then install them after positioning them accurately.

On completion of every assembly operation, an automatic inspection is performed.

After the valve tappets are installed comes a fully automatic measurement of the thickness of the calibrated pads used to insure proper play of the valves; this is done by four measuring stations which also pick out the pads needed.

Engine-Testing Bay

The test cycles to which every engine coming off the line is subjected are among the most advanced in the world; the tests make it absolutely certain that every engine produced will function perfectly and that they are all exactly alike insofar as concerns performance, noise, etc.

The engine-testing department is also automated to the nth degree: only a very few connections are still done by hand.

All engines are subjected to a comprehensive cycle of three sets of tests, in which 19 automated test-stations are used. There are 12 prepping stations and 10 inspection stations.

The completed engines are automatically removed from the pallets on which they traveled down the assembly-line, and placed on different pallets, equipped with self-connecting devices that let them latch onto other pallets, on which they travel over rollers to the preparation area.

Many of the operations performed in this area are manual: they consist primarily of connections between engine and pallet (such as the compressed-air tests for tightness, etc.).
The engines then go to the test stations; the pallets, whose movements are controlled by the management computer for the engine-testing area, are plugged into the test-benches automatically.

The three series of tests in the cycle are conducted in sequence on three groups of benches.

Static cold tests, which last 1.05 minutes, check the seals on the lubrication circuit and the various cooling-water channels. They also measure load-loss in the oil ducts (which must be neither higher nor lower than the minimum and maximum tolerances), and then the correct amount of lubricant is injected.

Then come the dynamic cold tests, which last one minute; during that time, the engine is jump-started by an electric motor; instruments measure losses by attrition and "pumping," meaning the power needed to bring the engine up to a specific rpm-level. Then come inspections for pressure in the lubricating system, intake, and compression, proper operation of the alternator and ignition system. From this, they move to completely automated regulation and setting of the idling-speed and ignition-timing.

Last of all come the hot tests, which last 4 minutes, during which a series of observations are recorded with the engine in operation. These tests are conducted at 12 separate benches.

Special attention is paid in this stage to inspections and recording of noise levels from engine or joints.

If an engine fails any of these three sets of tests it is automatically sent to the repair bay (a TV monitor relays information as to the defect discovered).

Once the requisite repairs have been made the engine must in any event repeat the entire three test series called for by the cycle.

Spot-checks are also run on the characteristic curve; to do this four test- benches enclosed in sound-proof booths with temperature controls are used, each one of them managed by a computer.

[Boxed Section]

Thanks to the reduced number of components, the extremely expedited technical solutions that set the Fire engine apart from the rest, and to new production systems, it was possible to achieve exceptionally short production times.

The investments entailed in the design and construction of the Termoli 3 plant were very considerable, totalling some 600 billion lire.

Termoli 3 has the capacity to turn out 2,100 engines a day: that's an engine every 20 seconds or so.

It takes only 107.5 minutes to build a Fire engine, as opposed to the 231.5 minutes needed for the 127 engine -- a time-slash of 53.5 percent.

[Boxed Section]

Termoli 3 Guidelines

The plant was designed for maximum productivity and keyed to very high quality.

During the design phase they minutely scrutinized all the available options in terms of production techniques so as to be sure they picked the most advantageous solutions.

The level of automation at Termoli is extremely high. Materials transport, component finishing, and engine assembly, as well as quality-control and management of the entire production system are all but totally automated. Here, for the first time in a mechanical production plant, you will also find systematic use of robots, which hitherto were used mainly in body plants.

At Termoli 3, the presence of robots is pervasive, especially in assembly operations: this yields a very high level of operational flexibility, making use of the ability of robots to perform more than one task. Clearly, this approach has boosted production potential very considerably.

There are robots that monitor delivery of parts, robots that load the finishing machines, assembly robots and measuring robots.

The assembly line has self-adapting robots equipped with sensors or vision systems. To get some idea of the precision with which they work, consider the robots that slip the valves into the guides (the diametric play between valve and guide is on the order of 0.02mm). If a robot does not immediately find the part he needs he can go and find it, on his own.

The measuring robots, equipped with sensors, select components from the assembly line at random, and "spot" any deviations from expected quotas.

Design and building of such advanced and sophisticated manufacturing tools was possible because of the major advances in electronics and the exceptional know-how concentrated in FIAT proper and in its COMAU industrial storage and cleaning division.

The technologies utilized in finishing, assembly, quality control, and computerized management of the entire production process are so advanced that even 3 short years ago it would have been impossible to build and operate a plant like Termoli.

The skills of the plant staff result from a massive training plan that involved everybody involved in Fire's production, from fabrication to maintenance. Many who signed on as unskilled workers are now systems managers, a new category of experts that evolved with the emergence of highly automated fabrication systems. Playing a fundamental role in this development was the extensive use of data-processing support systems.

Special terminals deliver information on production ststus, on product quality, on the operational condition of machines, and on the status of stockpiles.

Should anything go wrong with a machine, the video-display diagnostic screens alert their monitors to the causes of the shutdown and indicate the steps required to set it right.

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CSO: 3698/612

AUTOMOBILE INDUSTRY

BRIEFS

FRENCH FUTURE VEHICLE RESEARCH--Paris--New cars which consume less than 3 liters of gas per 100 km, low bodied buses, environmental protection research, and recovery of braking energy: the French program for "technical research and development for land transportation is on the right path," was the opinion of Hubert Curien, minister of research and technology, and Jean Auroux, secretary of state for transportation, on 29 March in Paris. Presenting some achievements of the manufacturers in this field, notably Renault's VESTA and PSA's ECO 2.000 cars, the ministers pointed out that transportation research was a priority program endowed with 2.3 billion francs in incentives over a six-year period since 1983. "It is a Japanese-style program," Mr Auroux pointed out, "because it was necessary to intervene on the partners' research topics with an associative approach, joining industrialists, laboratories, and research agencies." Various achievements were assessed by the projects' executives: the "3 liter program" must thus conclude in 1986 with the construction of vehicles that consume less than 3 liters, with characteristics comparable to those of current low-end cars. The results appear encouraging at present: ECO 2.000 consumes 2.23 liters at 90 km/h. "The research should have spinoffs for Citroen's entire line, and even lead to the development of a low-end vehicle," stated an executive in the operation. [Excerpt] [Paris AFP SCIENCES in French 4 Apr 85 p 94] 11,023

CSO: 3698/597

BIOTECHNOLOGY

EEC FUNDS NEW BIOTECHNOLOGY RESEARCH PROGRAM

Paris AFP SCIENCES in French 21 Mar 85 pp 74-75

[Unsigned article]

[Text] Brussels--The multi-annual EEC Program for Biotechnology Research Projects (1985-1989) was adopted on 12 March 1985 by the Council of Ministers of the Community.

This five-year program, to which the EEC has allocated 55 million ECUS, should be a specific trump card for Europe in facing biotechnology's strategic challenges, whose stakes are fundamental for our future.

This new program, which should have an impact on many of the Community's sectors--agricultural, industrial, or health--expands the current biomolecular engineering research and training program (1982-1986).

Among the promising results of the initial biomolecular engineering program are the operation--achieved almost simultaneously by two contracting laboratories (see Gand's information elsewhere)--which consists of introducing and expressing a foreign gene in plants belonging to the monocotyledon group, to which also belong all the grains that form the basis of human or animal nutrition; and still in the food sector, appropriate genetic manipulations performed by five laboratories located in four different member nations, on bacteria of the streptococcus type, which make it possible to contribute to the development of odor in cheeses and reduce the corresponding ripening time.

As part of its research and training contracts, the program provides:

On one hand, the implementation of measures designed to improve the support infrastructure--a combination of installations and know-how--in bio-computerization (organization of data banks, advanced software systems, and so on), and the collections of biotic materials (improvement of existing microorganism, virus, and cell collections, conservation and "revitalization" methods, and so on);

On the other hand, the intensification of research in basic biotechnology, such as enzyme engineering (development of bio-reactors, enzymes and proteins, and so on), genetic engineering, technology for in vitro cultivation of cells and tissues, and risk evaluation.

The program also provides post-doctoral training programs (1-2 years), and pre-doctoral scholarships for a duration of 12 months or less, in the sectors mentioned above, as well as in the physiology and genetics of species useful to man, the control of toxicologic effects, and the biological activity of molecules.

The EEC's financial participation is nearly 50 percent for shared cost contracts, but covers all research training expenses (training contracts and pre-doctoral scholarships).

Particular attention will be devoted to research proposals that involve an integrated participation of public laboratories (universities and national institutes) and industry, and to joint proposals from two or more laboratories located in different member states.

In addition, the program contains a complementary concerted action aimed at greater harmonization of national and EEC policies.

Given the above, the program as a whole should contribute extensively to the transfer of technologies to industry, and facilitate trans-national collaborations.

A notice of appeal for the proposals must presently be published in the JOURNAL OFFICIEL DES COMMUNAUTES EUROPEENNES for implementation of the contractual program.

More information can be requested from the following address:

Commission des Communautes Europeennes
Direction Generale "Science, Recherche et Developpement"
Direction F
Division "Genetique et Biotechnologie"
200 rue de la Loi
B-1049 Bruxelles
Tel: 235.4044 Telex: COMEU B 2187 Telecopier: 235.0145

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CSO: 3698/597

COMPUTERS

BULL FORMS INDUSTRIAL ALLIANCES WITH U.S., JAPANESE FIRMS

Paris ELECTRONIQUE ACTUALITES in French 7 Jun 85 pp 1, 8

[Article signed Ph. M.: "Apart From the Introduction of the DPS 90, Bull Is Adding IBM's 3380 and NEC's Acos 750 to Its Catalog"]

[Text] Bull's new large all-purpose computers, the DPS 90 from NEC, were expected to be included in the French company's catalog ever since the two groups signed an agreement early last year.

But the announcement of their availability on the French market was accompanied mainly by considerable surprise since they come accompanied with IBM 3380 units purchased as OEM equipment.

Simultaneously, Bull signed a protocol of agreement with NEC to include the Acos 750 in its catalog, as top model of the DPS 7 line.

The technical problems encountered by MPI [expansion unknown] (the peripherals manufacturer controlled by Control Data, in which Bull owns a minority interest and which supplies essentially the manufacturers of the "Bunch") eventually had a direct impact on the Honeywell environment. It all looks as if, after manufacturers of compatible products tried with more or less luck to gain access to IBM sites through the "periphery," the reverse was now happening at the expense of the "Bunch," of which Bull is a part as a result of its ties with Honeywell, and to IBM's great satisfaction.

When sources of supplies narrowed (i.e. when CDC [Control Data Corporation] and Storage Technology gave up last year, and due to the small impact made by other manufacturers), Bull could find no other OEM source to meet its clients' demand for storage units than IBM itself. The 3380, IBM's new generation of dual-density disks, which Bull renamed MSS 680, offer a storage capacity of 15 gigabytes with an average acces time of 15 ms, a thruput of 3 megabyte per second per channel, and they will be available on all Gcos 8 systems (except for the DPS 8/47 and 49) already by the second quarter of next year.

These units, which Bull defines as being "highly reliable," will be manufactured in Germany, as the agreement was signed by the French company directly with IBM Europe. But the announcement of the DPS 90 is accompanied by another surprise: the French company and its Japanese supplier have signed another

agreement to add to Bull's catalog the mid-power Acos 750 system on which the Gcos 7 operating system has been ported so that, with a power of the order of 6 Mips [millions of instructions per second] (i.e. about three times as much as the present top-of-the-line model), it becomes the top model of the DPS 7 line.

The final agreement will probably be signed next September; it will make it possible for the French company to manufacture this model at its Angers plant where the production and assembly lines of the DPS 7 and 8 are already installed. However, to prevent observers from imagining anything to the contrary, Bull indicated that it would "retain leadership over the DPS 7 line under the three-party agreement that binds it to Honeywell and NEC," and above all that "a current research and development program at Bull systems is designed to plan the future evolution of this line of products, both toward the top and toward the bottom of the line.

Considering the continued development of this line of products, therefore, the Acos 750 is offered as a temporary solution. But temporary solution also means that there will be some delay; this will not fail to renew speculations as to Bull's ability to play a fully industrial part, even in the context of an alliance in which the distribution of tasks is defined.

An Answer to Sierra

The Acos 750 as well as the DPS 90 are defined by the French company as "engines" on which it will install the operating systems developed by itself and Honeywell and the DSA network architecture, and to which it will connect its terminals and microcomputers. The DPS 90, which broadens the power offering of the DPS 88 lines, was already marking the end of Honeywell's technological capacity at this level when it was announced; just remember the delay that resulted from the announcement of the DPS 88, due to problems encountered by the Minneapolis manufacturers with circuit cooling.

The technological pole of this industrial alliance is now established in Japan for good.

At any rate, with the DPS 90, Bull now has a range of large computers that enables it to meet a demand for computing power that is increasing by 40 percent on the average among its clients, and even by 50 percent in the case of applications involving access to databases.

Most of this demand, according to Bull, is due to the emergence of a number of new concepts among users, eager to get more memory and faster information processing (development of software engineering or so-called "fourth-generation" software).

The DPS 90 line consists of five models, three of which are redundant. The two non-redundant models are the DPS 90/91 (single-processor on a par with the IBM 3081) and the 90/92 (slightly below the IBM 3090/200).

They offer 32 to 128 megabytes of internal memory, 1 or 2 input/output processors, 16 or 32 physical channels, and 64 to 128 logic channels.

The 90/92 is available in a fully redundant version, the so-called 90/92 T (for tandem), which is the third model of the line.

Still based on the single-processor 90/91, the company offers a three-processor version: the 90/93, with a power midway between the Sierra models; and a four-processor version, with a power slightly below that of the 3090/400, which is of the order of 50 Mips.

The multiprocessor or redundant configurations, therefore, are getting star billing in this catalog, the most powerful model of which can have up to 256 megabytes of internal memory and up to 64 input/output channels.

According to Bull, there is an increasing need for configurations of this type due to the development of transactional and real-time applications for which failure-prevention is a major consideration.

In this connection, the company also decided to expand its line of DPS 88, with the DPS 88/42 T that is said to be on a par with the IBM 3083, and the 88/82 T (50 percent more powerful) which, 2 to 2-1/2 times more powerful than the DPS 8/70, would then face the 3081.

With the new top of the line models, emphasis is also placed on the capacity of these machines to process a number of scientific and technical programs, applications for which they are said to be two to four times more efficient, thanks in particular to the fact that a number of Fortran functions have been microcoded.

The DPS 90 units, most of which will also be available later this year or early next year, are priced at FF 25 million and up. Whereas, according to some U.S. observers, the total number of DPS 8 and 88 is now 3,000 systems worldwide, Bull acknowledges that the total number of DPS 88 (introduced more recently, late in 1983) will be 130 systems (50 of which installed by Bull).

Paradoxically, the introduction of the DPS 90 will at first result in increased sales of the DPS 88, as it should reassure DPS 8 owners as to the continuity of the line in terms of power, even though, according to our colleague Datamation, this raises the question of what chances the three manufacturers have to preserve their installed inventory against the increased offensive of IBM and manufacturers of IBM-compatible products.

When the Acos 750 is added to the catalog, it should have the same line effect on the DPS 7 now available.

9294
CSO: 3698/629

COMPUTERS

MATRA, NORSK DATA TO DEVELOP VECTORIAL COMPUTER

Paris ELECTRONIQUE ACTUALITES in French 28 Jun 85 pp 1, 7

[Article signed Ph. M.: "The MATRA/Norsk Data Vectorial Computer Project"]

[Text] MATRA [Mechanics, Aviation and Traction Company] and Norsk Data have just carried one step further the agreements that bind them since last November; they announced the joint development of a vectorial computer of several hundreds of Mflops [millions of floating-point operations per second], that should be completed in 1988.

Although the two partners indicated that completion of the project was not dependent on the obtention of public subsidies, both hope that the project will be considered under the European Eureka program.

Although the relations established late last year between the French group and its Norwegian partner may to some have looked like an agreement made for the occasion, the announcement made a few days ago by the two partners, that they had decided to develop a vectorial computer jointly, brings the two firms closer together and at the same time it gives the impression that, finally, MATRA has a clear and consistent computer strategy. In the works at Norsk Data for nearly two years already, the vectorial computer that the two groups will start industrializing in three years from now will by then be in a mid-range computer category since it will develop a power of several hundreds of Mflops, which should place it on a par with systems that might be offered by a manufacturer like Floating Point Systems.

Norsk Data will probably design the hardware architecture and MHS (Matra-Harris Semiconductor) will develop specific VLSI circuits. No precise information on the technologies used is available for the time being, but the two partners guarantee that they will be "new both for components and for the computer architecture." According to our estimates, in 1988 MHS should reach an integration level of the order of 1.2 to 1.5 microns in CMOS technology. As far as the architecture is concerned, looking forward to 1988, practically all options can be considered (pseudo-parallel architecture, RISC [reduced instruction set computer], etc.).

One characteristic, however, appears to be certain: the price category of the future computer. It should approximate the price of super-minicomputers, i.e. FF 3 to 5 million.

One important factor in the two companies' undertaking is that they are determined to pursue development to completion, even if they do not get any public credits.

This commitment was made by Mr Lagardere when he signed the agreement in Oslo, in the presence of Mr Curien.

However, Mr Curien promised that the authorities would provide the product with easy access to public and parapublic markets.

Actually, Mr Lagardere had been thinking of placing the project into the orbit of the Eureka program.

But, as we must acknowledge, the content of Eureka has not been defined yet.

Actually, Eureka covers products oriented mainly toward non-military applications (but, at this level, the borders between civilian and military markets are not very clearly drawn) that could be industrialized rapidly, and it may imply cooperation with European countries that would not be EEC members.

Actually, like Bull and Siemens a few days ago with their supercomputer project (see our last issue), the two partners decided to stake a claim with respect to Eureka.

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CSO: 3698/629

COMPUTERS

BULL OF FRANCE INTRODUCES REAL-TIME SCIENTIFIC MINICOMPUTER

Paris AFP SCIENCES in French 11 Apr 85 pp 18-19

[Article: "Bull Is Launching the First Real-Time Scientific Multi-Microprocessor Minicomputer"]

[Text] Paris--On 11 April, the French group Bull announced the introduction of the first real-time scientific multi-microprocessor minicomputer, the SPS 7, that will give the company access to some of the European scientific and industrial data-processing market, estimated at FF 40 billion for 1988.

The Bull SPS 7 line is the result of cooperation with the CNET (National Center for Telecommunications Studies), the INRIA (National Institute for Data-Processing and Automation Research) and the Bull Sems subsidiary which is responsible for its development, industrialization and manufacturing; the Bull SPS 7 line is intended for the markets of scientific and industrial data processing, computer-aided design and manufacturing and telecommunications.

This line of computers, "developed with the constant concern of complying with major world standards with respect to both hardware and software," is already being produced at the Bull Sems plant in Echirolles, near Grenoble, which should produce close to 1,000 units per year.

According to Mr Francis Lorentz, Bull Sems president, and Mr Georges Grunberg, general director, the SPS 7 "is to-date the first minicomputer in the world to ally a multi-microprocessor structure, the Unix software of the U.S. company AT&T/Bell Laboratories, and a real-time monitor covering both the scientific and industrial sectors and the communications sector."

Initially developed by PTT [Post and Telecommunications] engineers to meet CNET requirements, the SM 90 system around which the SPS 7 is operating has thus found a broader scientific and industrial outlet that will also make it possible to consolidate and complete the whole range of other Bull computers.

Through its modular architecture, its shared memory based on 256-kilobit components with an overall capacity of up to 16 million 8-bit bytes, and all its other technical capabilities, the SPS 7 is suitable for many applications, about 100 of which have already been identified. In the scientific sector,

for instance, as a work station for software development and utilization in the fields of scientific computation, simulations, data processing, visualization of physical or other phenomena, real-time data acquisition, signal processing.

In CAD/CAM (computer-aided design and manufacturing), the SPS 7 may find applications in the fields of electricity, electronics, mechanics, architecture, the graphic arts, etc; and in the industrial sector, it is suitable for process control, monitoring, testing, robotics. It can also be used in the field of communications, as a network node, as concentrator-distributor, as server, etc.

According to Mr Jean-Pierre Poitevin, CNET director, it is just what was needed for detailed billing, telecommunications network management, etc. Its cost will of course depend on the applications considered and the memory capacity required. It will range from FF 100,000 to FF 300,000, exclusive of tax.

As an example, a Bull SPS 7/50 configuration oriented toward industrial and scientific applications, including a central memory capacity of 512 kilobytes, one 5-megabyte plus 5 megabyte disk unit, and 6 asynchronous communications lines, will sell for FF 121,000 (exclusive of tax).

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CSO: 3698/615

COMPUTERS

PHILIPS ENTERS MARKET FOR SIGNAL ANALYSIS EQUIPMENT

Paris ELECTRONIQUE ACTUALITES in French 7 Jun 85 p 17

[Article by J.P. Baranes: "Through an Agreement With Trace and Euroventures BV, Philips Is Entering the Signal-Analysis Market"]

[Text] Philips, which was already widely represented in the electronic instrument field, is now entering a new market: that of signal analysis. This is the result of a framework cooperation agreement that was just signed by Philips Austria, Philips International, the Austrian company Trace Electronic Instruments and the Euroventures BV holding (whose 12 members are: Saint-Gobain, Lafarge Coppee, ASEA [Swedish General Electric Corporation], BSN [Boussois-Souchon-Neuvesel; Gervais-Danone], Bosch, Eternit, Fiat, Olivetti, Petrofina, Philips, Pirelli and Volvo).

This framework agreement covers OEM sales, technical cooperation (for the development of future generations of equipment), licensing rights, financing; for the time being, it covers marketing and future development of the signal analysis system designed by Trace.

Until now, this instrument was marketed by Elexo (a few tens of units have been sold); from now on, it will be marketed by Philips.

The system, which is now referenced PM3360, offers, in a single piece of equipment, complex functions which until now required several instruments: digital oscilloscope, digital multimeter, meter/frequencemeter, power meter, audio-signal analyzer, Fourier and spectrum analyzer.

Quite obviously, as a signal analyzer it has a number of similarities with instruments produced by manufacturers such as Nicolet or Data Precision (T2I) among others; but the Trace instrument offers additional functions and capabilities: for instance, a color screen (up to 10 traces of 7 different colors can be displayed simultaneously), or again 4 independent time bases and the possibility of processing simultaneously the various traces displayed.

Latest Developments of the PM3360

Among the latest developments of this instrument, we note a 50-MHz sampling slide valve.

The PM3360 embodies a microcomputer programmable in Basic, with incorporated keyboard and floppy disks; it provides rapid and direct signal processing and allows for fully automated operation.

It can display up to 20 measurements; Philips is presenting it as the equivalent of "20 meters or multimeters."

One of the interesting functions is the "cut function," that makes it possible to isolate part of a signal and subject it to a number of operations.

A major aspect of the agreement signed by the above-mentioned parties, is that it guarantees Trace the possibility of developing its own ideas rapidly "which is essential in the present world of advanced technoloyg." In this respect, Trace will have access to various fields of expertise of Philips.

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CSO: 3698/628

CORPORATE ORGANIZATION OF OLIVETTI-FRANCE

Paris MINIS ET MICROS in French 15 Apr 85 p 34

[Unsigned article]

[Excerpts] We spoke with Philippe Lapeyre, who heads the microcomputer section of the Olivetti France sales organization. He defined the company's marketing policy and explained the selection of a compatible computer.

Olivetti France's new commercial structure organization, announced in February (see chart), confirmed the single line organization and the distribution of functions by type of market. It presages the group's new marketing strategy.

Some Results

In 1984, the parent company Olivetti had registered revenues of 2552.5 billion lire (+36.2 percent) and a net profit of 237.1 billion lire (+69 percent). The Olivetti group had achieved consolidated revenues of 4574.9 billion lire (+22.4 percent).

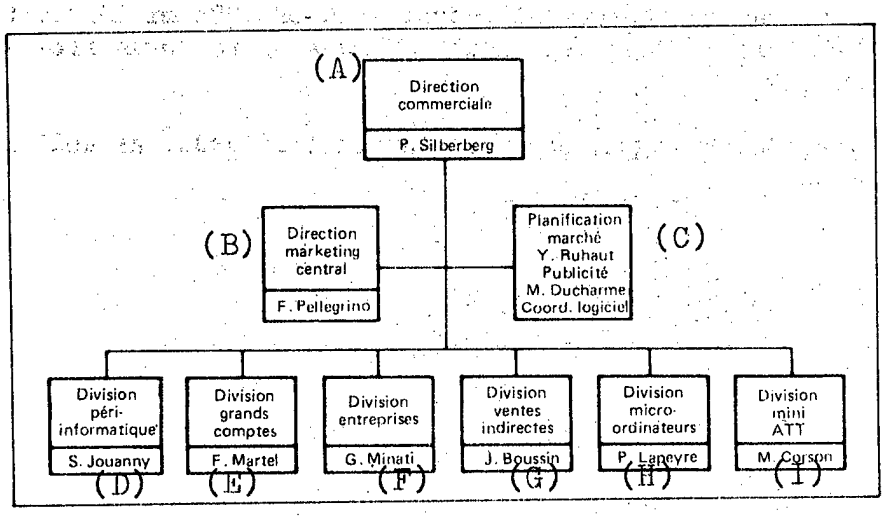
During the year, the parent company had completely retired its financial debt and produced a net availability of 100.8 billion lire. Self-financing had reached 438.6 billion and the company's net condition, including operating profits, is 1879 billion.

In Europe, Olivetti recorded 8 percent microcomputer sales for 1984, and about 10 percent in France. Production capacity should exceed 400 units [as published] per year by the end of the year, to reach one million units per year in the future.

Commercial Policy

The commercial division consists of 550 persons, in two large groups: direct sales (large accounts, enterprises, and peripherals), and indirect sales (distributors, mini and microcomputers).

A large promotional effort is planned for the whole year, and concessions are extended to resellers (more than 400 distributors).



Organization chart of Olivetti-France

Key: (A) Commercial section
(B) Central marketing section
(C) Market planning. Publicity. Software coordination
(D) Peripherals section
(E) Large accounts section
(F) Enterprise section
(G) Indirect sales section
(H) Microcomputer section
(I) Mini ATT section

Mr Lapeyre defines the features of the offer as follows:

Rapid response: very rapid adaptation to market changes (see choice of compatible);

Offensive strategy;

Mixed marketing, concerning both equipment performance and its sales;

User closeness and availability.

A maintenance force of 750 people has been installed in this light. It is scattered in 60 centers and guarantees response within eight hours. Maintenance can be assured either by resellers or directly by Olivetti.

The M 24

The M 24 is a true 16-bit (bus and processor) machine which supports the MS-Dos, C-CP/M-86, and UCSD P-System operating systems. It offers graphics facilities (640x400 pixel resolution and sixteen colors or shades) and series or parallel interfaces.

Magnetic supports can be of several types: 360 or 720K minidiskettes, or an external 10M hard disc. The basic unit can have up to seven free slots for additional cards.

It accepts all software compatible with market standards, as well as as that of the model M 20.

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CSO: 3698/599

COMPUTERS

OSLO UNIVERSITY, NORSK DATA NEXT-GENERATION COMPUTER PROJECT

Oslo AFTENPOSTEN in Norwegian 4 Jul 85 p 7

[Article by Jenny Lippestad: "Oslo University and Norsk Data: Toward Joint Data Processing Future"]

[Text] Oslo University and Norsk Data A/S [Inc.] are planning a joint venture concerning the development of next-generation computer systems from the firm. Oslo University recently presented a plan for an approximately 400-million-kroner information network for the year 1990, the so-called ODIN project. Norsk Data will play "a vital role" in supplying equipment, but not a solo role, College President Inge Lønning and Administrative Director Rolf Skår said at a press conference on Wednesday.

To the question of whether Norsk Data can be assumed to be submitting favored bids for equipment for Oslo University, Rolf Skår answered that this will be evaluated from time to time.

To the question whether there is strong competition between universities in the data processing field, Inge Lønning answered:

"We certainly have some competition, but this is only healthy. We are really concerned with not having a solo role in this work, but each institution at the same time has a duty to itself to present its own plans," Lønning said, who in addition drew attention to clear signals from the authorities regarding banking on information technology. He [as published] also said that Oslo University has become more aggressive in joint ventures with industry and business.

To a question regarding to what extent more than one university in Norway can receive such big amounts of money for data processing development, Lønning said:

"With the familiarity I have with the Storting's preference for district politics, I do not harbor any fear of other universities," he answered.

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CSO: 3698/578

COMPUTERS

FRANCE'S NATIONWIDE COMPUTERIZATION PLAN BEGINS

First Equipment Delivered

Paris AFP SCIENCES in French 21 Mar 85 pp 38-39

[Unsigned article]

[Text] Paris--The manufacturers selected for the "Computers for Everyone" plan have started deliveries of the first 3000 units, we learned on 20 March in Paris from the New Technologies Task Force of the National Education Ministry.

The first order of the plan, which provides for the installation of 120,000 microcomputers in schools by the end of the year, amounts to about 30 million francs. The computers will be installed in 250 high schools in order to train instructors during the Easter vacation at the rate of one 48 hour course during six days.

All the manufacturers selected are French--except for the German Mannesmann which supplies the printers--and "there are no present expectations for foreign manufacturers to participate in this plan." The American Apple had been approached by the World Computer Center, while the British Sinclair had offered a European-scale collaboration.

The high schools will be equipped with a machine known as "network head" (either a Leanord Sil'z, a Logabax Personna, or a Bull Micral 30) connected to 12 MO5 personal microcomputers, four independent Thomson T07-70 personal computers, three Goupil 3 made by SMT, and the Mannesmann printer. Schools and high schools will have the same configuration except for the Goupil 3's.

The Task Force pointed out that all these manufacturers will be part of the final list retained to assure the rest of the deliveries by the end of the year, but others could be added. The personal computer Excelvision made by the nationalized group CGCT (General Company for Telephone Manufacturing) will probably be selected. Similarly, Matra could be chosen for two computers: the Max 20E for network head and the future Alice 8000 which will complete the high end of the present line of the group's Alice personal computers.

Beyond technical performance, the determining criteria of the Ministry were "very short delivery times and considered prices," the Task Force continued. It appears that the government has encountered difficulties in obtaining software. While part of the programs are developed by the ministry and the High School Directorate, some of the software will be bought on the market.

Plans for Computer Networks

Paris AFP SCIENCES in French 4 Apr 85 p 23

[Text] Paris--The installation of the "Computers for Everyone" plan is proceeding on schedule and will be completed on time; for the new year starting in September 1985, all schools will have machines and software, with teachers having been appropriately trained, states Gilbert Trigano's Delegation for New Training.

In a press release on 2 April, the delegation recapitulates the work carried out since the inception of the plan on 25 January; the plan will bring the number of school computers from 35,000 to 155,000, and will allow the training of 100,000 teachers in several months; at the same time, agreements reached with public collectivities and associations make this equipment available to adults during non-school hours.

The essential aspect of the project, the delegation points out, is the development of the "nano-network" which makes it possible to provide institutions at a very reasonable cost, with equipment that combines the power and compatibility of a professional computer with personal computers connected in an expandable network.

For instance, 33,171 one-class schools or small primary schools will have a personal microcomputer per institution, equipped with a printer, a program reader-recorder, and a color television.

Another 11,773 institutions, of which 9040 400-student schools and 2733 high schools, will have a nano-network with a professional microcomputer connected to six work stations (the technique allows subsequent expansion to 30 stations) together with the necessary ancillary equipment.

The same nano-network will exist in 500 high schools, but connected to eight work stations. Each institution will also have three professional microcomputers for independent use. Lastly, 3500 professional microcomputers will be installed in universities. Delivery and installation of the equipment will be assured by the government. At the same time, the plan provides for the purchase of French software (200 million francs were released in 1985) covering all types of applications: instruction, teaching, recreation, and professional. Each institution will receive a kit and will select complementary materials from a catalog.

Finally, training classes for teachers have started during the spring vacation (609 courses for 12,000 persons). They will continue during the summer (a total of 5000 courses for 100,000 persons). The sum of 250 million was allocated to pay instructors and indemnify those who attend the courses.

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CSO: 3698/599

COMPUTERS

NORSK DATA: CONTINUED GROWTH, MORE PEOPLE, NEW BUILDINGS

Oslo AFTENPOSTEN in Norwegian 26 Jun 85 p 44

[Article by Ulf Peter Hellstrøm: "New Construction Projects in Oslo: Norsk Data Growing Rapidly"]

[Text] "It has never gone so well for Norsk Data as now." This was said by Director Roy Jensen at the company during a press conference in Oslo on Tuesday. Continued rapid growth, growing profitability, new construction plans and increased employment are catchwords for growth in the computer company, which will probably achieve new record figures in the first half-year. Norsk Data is aiming at further construction projects in Skullerud to the tune of over 120 million kroner. In the course of a couple of years the company will employ 1500 to 2000 people in the capital.

Almost 70 percent of Norsk Data's sales of computer systems now come from models in the big Nord 500 series of powerful minicomputers. These systems cost from one half million to roughly four million kroner per system. The receipt of orders in the first half of the year is over 60 percent higher than in the same period last year. Sales seem to be growing at the same rate. Analysts expect a doubling of the computer company's profits, which last year were 233 million kroner before annual adjustments and taxes. The company suggests an increase in earnings of 80 percent in the first half of the year. By comparison, sales were 1.37 billion kroner last year and earnings per share after taxes were 19.44 kroner.

With this rate of growth through the year, too, this year the computer company can reach sales of about 2 billion kroner, distributed approximately equally over business in Norway and exports, and foreign business. The company has employed about 400 people since the turn of the year so that about 2600 people are now working at Norsk Data. About 1200 are working inside the country's borders. The concern is aiming at hiring 115 new researchers this year.

Skullerud

The new construction projects at Skullerud in Oslo will contribute to the concern's sooner or later having its activities in the Oslo area combined at a single place. Norsk Data's operations directed toward the Norwegian market are concentrated today around a building at Furuset. According to the plan,

these activities will move to Skullerud as a total of seven new blocks gradually become finished at Skullerud. The first occupancy will probably occur around the turn of the year in 1986-87. The construction projects constitute a total of 24,000 new square meters. Director Jensen during the press conference suggested a price per square meter of 5500 to 6000 kroner. Norsk Data will probably employ 1500 to 2000 people at Skullerud in the course of a couple of years. The rapid expansion which the company is now undergoing has probably contributed to the fact that the plans to sell the Furuset building have been temporarily put way back on the shelf.

Norsk Data has to a great extent managed to transform itself into a supplier of systems for administrative data processing. Herein lies an important reason for the company's growth, Director Jensen believes, who heads operations in the Norwegian domestic market. About 15,000 terminals are now connected to Norsk Data systems with access to the company's word processing program; a good 10,000 of these terminals are in Norway.

Jensen explains some of Norsk Data's successes in the market by the fact that the company at an early point chose to orient its offerings within administrative data processing and office automation toward trial lawyers. At the same time the company's concentration on solutions based on medium-sized computers put the company in a part of the computer market in which IBM, among others, is weak.

Norsk Data has had talks with the Cray Research and Control Data computer companies in connection with the Norwegian company's being tied into plans for the purchase of a supercomputer for the technical milieu around the Norwegian Technical College in Trondheim. Marketing Director Rune Hansen of Norsk Data reported this during the press conference. If the public sector appropriates money for this project, Norsk Data will come under consideration as the supplier of an especially fast computer in connection with this large computer system.

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CSO: 3698/578

COMPUTERS

BRIEFS

CRAY COMPUTER TO BP--On 8 July, the U.S. supercomputer manufacturer, Cray Research Inc., announced that British Petroleum (BP) had ordered a Cray X-MP 12 worth $7.5 million. After export license approval, this large-capacity computer will be leased and installed at the London headquarters of BP Exploration Co., during the last quarter of 1985; it will be used to increase BP Exploration's capacities in its oil and gas exploration and production operations. [Text] [Paris AFP Sciences in French 11 Jul 85 p 31] 9294

LEGAL PROTECTION FOR FRENCH SOFTWARE--Paris--On 30 March, an authorized source announced that the French government has decided to provide a legal framework to protect software (computer programs) against pirating, by having recourse to author's rights provisions. The services of the Ministry of Culture, taking advantage of the fact that next week the Senate will examine a legislation draft on the rights of authors and artists-interpreters, have formulated two amendments aimed at protecting software inventors against abusive user misappropriation of the computer programs they have created. For some time already, computer professionals have demanded legal protection against intensive software theft. They felt that recourse to legal provisions sheltering them from international piracy was indispensible, given the proliferation of computer program usage and the growing economic magnitude of the sector. According to official estimates, French software companies have achieved revenues of 45 billion francs in 1984, representing 6 percent of the world market, which is presently growing 30 percent per year. They employ about 43,000 people and their personnel is increasing 8 percent per year. [Text] [Paris AFP SCIENCES in French 4 Apr 85 p 25] 11,023

CSO: 3698/599

MICROELECTRONICS

FEB 1985 STATUS OF 'PUCE' PROGRAM IN FRANCE

Paris INDUSTRIES & TECHNIQUES in French 20 Apr 85 p 26

[Article: "PUCE Program: Already FF 6 Million for 72 Small or Mid-Size Industries"]

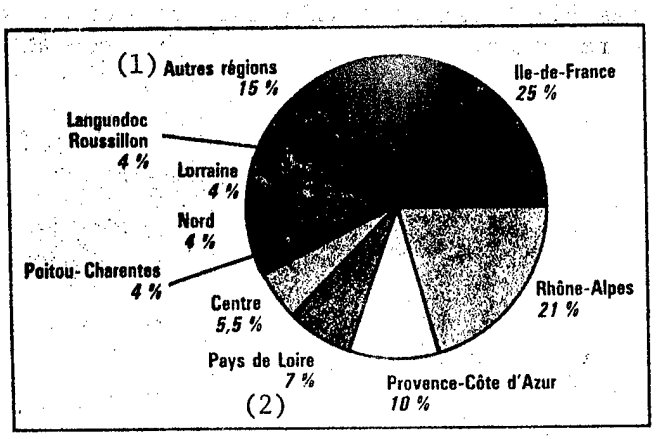
[Text] Of the FF 35 million earmarked for the PUCE [Products Using Electronic Components] program, FF 6 million have already been allocated by the DIELI (Directorate of Electronics and Data-Processing Industry) from April 1984 (first applications) to February 1985. The program, designed to help industries--especially traditional industries--"electronize" their products, is therefore only just starting. Yet, 72 small or mid-size industries have already benefited from this procedure, which consists of two stages: feasibility, with subsidies of up to 70 percent of the project but not to exceed FF 70,000; and completion, with a repayable aid of up to 50 percent of the project, but no more than FF 300,000.

This is a recent program so that, of the first 72 beneficiaries, 56 are still in the feasibility stage, with total subsidies amounting to FF 3.4 million, and 16 only in the completion stage, with aids totalling FF 2.6 million. These amounts are much lower than the actual cost of the corresponding projects to the companies, which amount to FF 10.7 million (feasibility stage) and FF 15.7 million (completion stage). But the discrepancy is explained by the fact that the PUCE program has often been asked to cover microelectronic subassemblies of larger projects.

Aid to Small or Mid-Size Industries With Less than 50 Employees

An interesting phenomenon is that 80 percent of the companies receiving aid are small or mid-size companies with less than 50 employees. Fifty percent of these developed their products in collaboration with microcomputer data-processing consultants or university laboratories.

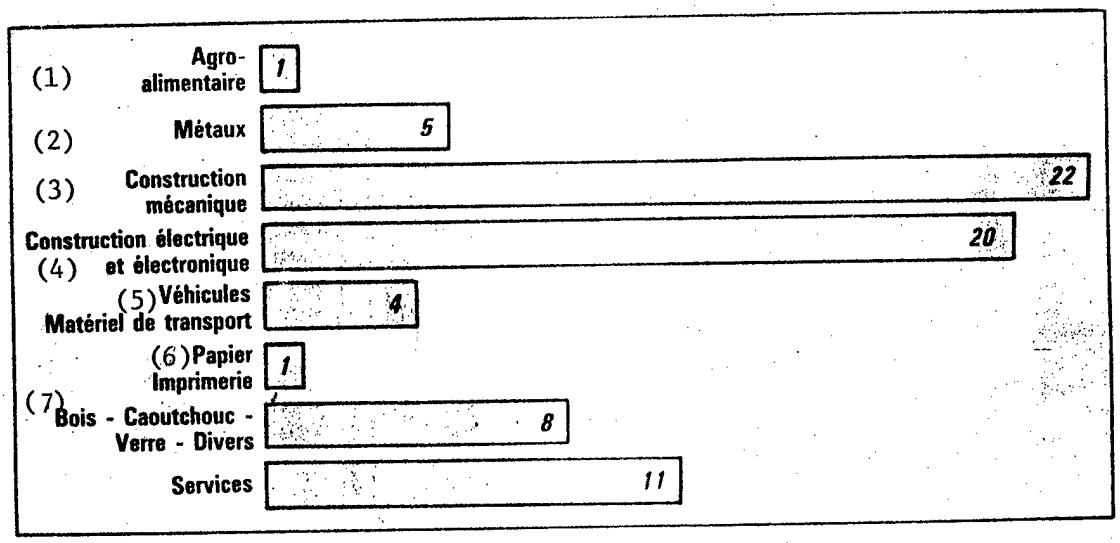
The breakdown of projects by sector shows worrying gaps: toys (alas!), pleasure-sailing equipment, or do-it-yourself tools, for instance, are not yet represented. One comfort is that there are many original projects: remote monitoring systems for the newborn, "numerical control" for hair dryers, instruments to measure fatback thickness and muscle length on pigs, etc.



Ile-de-France: 25 Percent of the Projects

Key:

1. Other regions
2. Loire Valley



Mechanics and Electronics: Over Half of the Applications

Key:

1. Agrifood
2. Metals
3. Mechanical engineering
4. Electronics and electrical engineering
5. Vehicles, transportation equipment
6. Paper, printing
7. Wood, rubber, glass, misc.

The regional breakdown shows the preponderance of the Ile-de-France and Rhone-Alpes regions, where there are many consulting companies. This imbalance should be corrected in part, however, as many regions that are already subsidizing feasibility studies will use the aid-to-completion procedure when the time comes.

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CSO: 3698/615

MICROELECTRONICS

SGS STRIVES TO BE PRIMARY EUROPEAN SUPPLIER OF GATE ARRAYS

Paris ELECTRONIQUE ACTUALITES in French 7 Jun 85 p 24

[Article by F. Grosvalet]

[Text] With its two families of CMOS gate arrays with up to 6000 gates, its seven design centers in Europe (one of them in France at Rennes), and its unit specializing in custom circuits, SGS wants to become "the" European gate array supplier, both for silicon and for available services.

However, the Italian company will not overlook the American market. It already has a design center in Phoenix, and wants to be an aggressive player in this specific area as in the others. It is true that it has been quite successful in this policy, since the United States portion of its revenues has gone from 9 percent in 1980, to 28 percent during last year.

SG had announced its intention to enter the semi-standard integrated circuit market more than two years ago with library circuits (see ELECTRONIQUE ACTUALITES of 26 November 1982), but has been on this market for only one year (end of 1984 in France). To support its ambitions (it expects to derive a good portion of its revenues from gate arrays), the company does have a technology (CMOS), products covering 90 percent of the current demand (272 to 6000 gates in 16 circuits), easy to use CAD facilities (LSI Logic LDS system operating on a VAX, work stations, or IBM-PC), and services.

2 Micron CMOS Gate Arrays Of Up To 10,000 Gates

At the beginning of next year it should introduce a 2 micron CMOS gate array of up to 10,000 gates, probably following an agreement with another manufacturer, as well as its own 3 micron CMOS-technology standard cells with two levels of metallization, compatible with its current family of 3 micron CMOS gate arrays.

Early in 1987, it should follow up with a family of 1.5 micron CMOS gate arrays, with two levels of metallization and n-wells, and with a library containing PLA, ROM, microprocessor core, and other functions.

50 Integrated Circuits Already Under Development

SGS is presently marketing its two families of CMOS gate arrays: HSG 3000, 3.5 micron, one level of metallization, 10 circuits of 272 to 2550 gates, 5 ns propagation time per gate; and HSG 5000, 3 micron, two levels of metallization, six circuits of 880 to 6000 gates, 2.5 ns propagation time per gate.

It has a current production capacity of 3000 wafers per month for the 3000 series, and 500 wafers per month for the 5000 series (2000 by the end of the year).

SGS also has genuine second source agreements with LSI Logic and Toshiba.

The first is for the two families and covers products, technology, and CAD tools (LDS system), and the second covers only the 5000 family.

At present, the Italian company quotes seven week delays for delivery of first samples from a net list (just ahead of the placement routing, which remains under SGS jurisdiction for reasons of design security), which can be drawn by the user either on his own equipment if he has a Daisy type work station, or on SGS equipment at one of the company's design centers (all the centers are connected with Agrate, which is equipped with two 11/780 VAX computers and 11 Daisy work stations).

The 3000 family is currently the only one supported by Daisy, but the 5000 should be soon, and this support will subsequently be extended to Mentor Graphics and Valid systems.

The Italian company already has 50 integrated circuits under development (two in France) or already developed (only one of the 20 that have been completed was not immediately functional) in telecommunications, computerization, as well as for military, aerospace, and industrial applications. The average complexity is 1700 gates (800 to 1000 gates for industrial applications) and quantities range from 10 units (military) to 40,000 units per month (personal computer) with an average of 10 to 30,000 parts per design.

Figures Reflect Market Growth

These figures are quite consistent with the market growth, which according to SGS should go from $512 million in 1983, to $1670 million in 1987, while the average complexity is increasing rather slowly (in 1986, 50 percent of the new designs should involve circuits with less than 3000 gates).

Still according to the Italian company, the share of computer technology should go from 37 percent to 36 percent between 1983 and 1987, that of industrial applications from 35 percent to 30 percent, that of telecommunications from 11 percent to 12 percent, and that of consumer goods from 7 percent to 14 percent. In 1987, Europe should represent 29 percent of the world gate array market (25 percent in 1983), Japan 23 percent (20 percent), and the United States 48 percent (55 percent).

Revenue of One Billion Dollars in 1988?

SGS, which in 1984 had revenues of $335 million (+46 percent with respect to 1983), still expects to achieve one billion dollars in 1988, and take its place among the 15 largest semiconductor manufacturers in the world (it is presently number twenty).

This year, it hopes to achieve a 10-20 percent growth, and appears well on its way, since its first quarter sales reached $86 million, being 12 percent higher than those of the last quarter of 1984, while the industry as a whole has dropped by 7 percent.

To fulfill these objectives, which are an integral part of the second phase of the strategy defined five years ago (the first phase consisted of making the company profitable, which it became in 1983), SGS has made massive investments (43 percent of sales in 1984); it has two production units under construction for 150-mm diameter wafers: one in Agrate for EPROM's, which should be operational in July, and one in Phoenix. It has also diversified its product line, as a result of which it now covers 45-50 percent of the total available market.

This diversification has also affected its products--the share of MOS integrated circuits has gone from 16 percent in 1980 to 31 percent in 1984, that of bipolars from 44 percent to 48 percent, and that of discrete circuits from 40 percent to 21 percent--as well as the markets it covers.

SGS, which made 51 percent of its sales in consumer goods (with automobiles) in 1980, now obtains only 34 percent of its revenues from this area; the share of computer technology has doubled to 18 percent and that of industrial applications (including distribution) has gone from 26 percent to 32 percent.

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CSO: 3698/625

MICROELECTRONICS

SIEMENS GETS TOSHIBA MEGABIT TECHNOLOGY IN PATENT EXCHANGE

Paris AFP SCIENCES in French 18 Jul 85 p 29

[Unsigned article]

[Text] Munich--A Siemens spokesman announced on 15 July that the FRG company has signed a cooperation agreement with the Japanese group Toshiba, covering an exchange of patents in the integrated circuit field. Thanks to this agreement, Siemens will be able to advance by about one year in one megabit integrated circuits, which the company planned to place in industrial production during 1987 at its Regensburg (Bavaria) plant. According to the Siemens spokesman, production could start during the second half of 1986.

Still according to Siemens, Toshiba has a definite lead in CMOS technology, which uses less power and thus generates less heat, allowing it to integrate a larger number of transistors. Siemens has decided at the same time to bring the investments for its Megabit project from 1.4 billion to 1.7 billion DM. With this project, the largest electrical manufacturer in West Germany wants to become one the leaders in 4 megabit integrated circuits.

Siemens reached an agreement last year with the Dutch company Philips, to work together on these circuits. Of the investments announced by Siemens for the Megabit project, 600 million DM will be devoted to research on 4 megabit circuits at the Munich-Perlach laboratory. This project is financially supported by the Dutch and FRG governments. According to the Siemens spokesman, the agreement with Toshiba is independent of the one signed with Philips.

During its last fiscal year, Toshiba obtained 13 percent of its approximately $13 billion revenue from integrated circuits. For Siemens, this portion is only 5 percent of revenues which in 1984 amounted to 45.8 billion DM (about $15 billion).

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CSO: 3698/625

MICROELECTRONICS

BRIEFS

PHILIPS, KYOCERA IN JOINT VENTURE--Eindhoven--The Dutch electronics company Philips and the Japanese ceramics manufacturer Kyocera Corporation, will create a joint venture to manufacture electronic interactive systems which will interconnect videodiscs, computers, and laser discs, announced Philips in Eindhoven on 16 July. The new company, Japan New Media Systems, Inc., established in Tokyo, will develop and produce systems for the international market, and will be responsible for their sale in Japan. Philips and Kyocera, which already cooperate in the personal computer field, will each hold 50 percent of the company. [Text] [Paris AFP SCIENCES in French 18 Jul 85 p 29] 11,023

CSO: 3698/625

SCIENTIFIC AND INDUSTRIAL POLICY

REPORT ON EUREKA DECISIONS AT PARIS MEETING

Paris AFP SCIENCES in French 18 Jul 85 pp 1-3

[Article: "Official Creation of Eureka"]

[Text] Eureka has been born. Now it has to be made to work and its research projects have to be financed. The ministers for foreign affairs and research from 17 European countries decided on 17 July in Paris that Eureka was established and that their next meeting before 15 November in Bonn (FRG) should see to setting up specific research projects.

In their final statement, which established a provisional organization--namely, the office of secretary entrusted to France (ambassador Claude Arnaud)--, the ministers of the 17 countries and the representatives of the European committee, including its president Jacques Delors, reaffirmed their "strong support" for the Eureka project for the renewal of European technology, launched by President Francois Mitterrand last April.

The French president, himself inaugurating the first sessions of Eureka, contributed Fr 1 billion to the funding of the new project: additions to the budget for the most part (Fr 700 million and Fr 300 million from the industrial modernization fund), which can be allocated to the industrialists' joint research work.

Although several countries said they were prepared to support the projects financially, France was the only one to commit itself for a specific amount. A West German spokesman stated that the FRG for its part would also provide financing but that no specific amounts were budgeted a priori in the 1986 budget for Eureka.

Hubert Curien, the French minister for research and technology, pointed out that the final statement was "lapidary and condensed." In the opinion of the delegates, there was a great deal of exchange during the round table discussions on 17 July and many proposals were made.

This positive outlook was also shared by the heads of large French businesses and research organizations who were present at the inaugural session, some of whom maintained that whereas at the beginning it could be feared that Eureka was only a political idea, things were now moving ahead very quickly and that what was at stake at the meeting was genuine.

The important role of industrialists was stressed by several delegations; they are the ones who must propose projects for joint research which would then be examined by a council--several proposals were made concerning its organization--then financed on a case by case basis with decisions being made concerning the specific setup, goals, and completion time.

Several delegations--including the British among others--insisted on the flexibility and small size that Eureka's organizational structure should have. According to these delegations, the size of the commercial markets for products benefiting from research carried out in the Eureka program should also be a major concern.

Sir Geoffrey Howe, foreign office secretary, emphasized that "one of Eureka's key elements should be its flexibility," and he also declared that "products should have a world market potential, and should directly affect the daily life of Europeans."

The German representatives--particularly Hans Dietrich Genscher, minister of foreign affairs--approved the philosophy of the Eureka project, agreeing with France on the importance of what was at stake, and insisting on the nonbureaucratic character which the administration of the project should possess. In his view, industrialists should have a large part in financing, in proportion to the directly applicable character of the work: the more basic the research, the greater should be the part of governments, the committee and other organizations in financing it.

The Germans also stressed that the European Committee should occupy an important place in the running of Eureka, both because of its experience with European scientific programs and its financial resources. In comparison with the total of civilian research budgets of the member states, the EEC's research budget represents 10-15 percent of it, and 20-30 percent by its incentive effect.

Genscher referred, moreover, to the strategic defense initiative (the American SDI or "star wars") to do away with any misunderstanding. "Eureka is a necessity, with or without SDI. Neither with respect to its motivation, nor with respect to its objectives does Eureka represent a substitute for SDI or an alternative to this initiative," he declared.

Curien's Address

"The goal of the Eureka program," Hubert Curien stressed to the sessions on European technology, "is to bring to completion a certain number of specific projects, affecting areas where it seems necessary to increase collaboration between European states. The idea is to develop European potential as a whole in research and technology."

"A preliminary list of possible subjects was proposed by France in Milan, taking into account the ideas considered by industrialists and public authorities, and the initial reactions our representatives were able to ascertain during technical discussions with our European partners. This list is simply a proposal, and is completely open to amendment. It seems to me that some suggestions have already received enough approval that their realization in the framework of Eureka may hardly be doubted."

"The decision as to what projects will be adopted as part of Eureka should be made according to a certain number of criteria. A given project should:

--lead to the development of advance technology with economic or strategic importance;

--result in the realization of a product with original performance, leading to a market for applications;

--result in the involvement of several partners: industrialists or public institutions which make a substantial contribution to financing;

--necessitate the cooperation of several European countries for the realization of the project: the pooling of know-how, resources, a united front where applications are concerned etc."

"It is the very spirit of Eureka," emphasized Curien, "to focus on specific, concrete projects, carried on under industrial type job supervision by a project team completely responsible for the realization of the product with which it has been entrusted. It is important, therefore, that we bring to maturity a certain number of proposals. By 'bring to maturity' I mean bringing together specialists from the different countries concerned who have the responsibility for defining precisely all the tasks to be accomplished for the completion of each project, identifying the problem areas, estimating the cost with full knowledge of the facts, and deciding who will see to its realization."

"In conformity with the pragmatic approach we have followed in the Eureka program," the French minister of research continued, "I propose to favor the projects themselves and to entrust the oversight of each project to an industrial type of administration in which companies and public or private institutions would take part according to their interest, illustrating the basic principle of variable geometry. They would be managed by a board

of directors made up of shareholder representatives."

"What can we do to promote the Eureka program during the months to come? First of all, we must make an appeal to our industrialists to specify the projects which have been publicly announced and to propose new multinational projects. It will also be necessary for the authorities in some of our countries to contact one another to organize joint working sessions for those questions where such steps would be useful."

"These authorities should also endeavor to study the possibility of providing financial support in one form or another for this or that project whose strategic importance would seem to justify such support. Similarly, the community could profitably study the various contributions it could consider making to each of the projects being worked on," Curien concluded.

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SCIENTIFIC AND INDUSTRIAL POLICY

FRENCH COMMENTARY ON EUREKA PROJECT

Paris L'UNITE in French 5 Jul 85 pp 13, 14

[Article by Stephen Gere: "Eureka: The Industrialists Have Caught the Ball on the Rebound and Have Adopted Rapid Implementation Policies"]

> [Text] European electronic giants did not wait for the conclusions of the Milan summit before coming to an agreement. Eureka is already showing itself to be a superb locomotive for European technology, to which the Swedish, Swiss, Norwegian and, why not, Russian and Japanese freight cars ask only to be attached. President Mitterrand, who set the program in motion, can be satisfied.

At the beginning of the year, Francois Mitterrand announced his intention to make an initiative intended to achieve recovery in Europe. It certainly needed it. A few weeks later, on 18 April in Bonn, he founded the Eureka project. But this European technological initiative still had to be maintained on its baptismal funds by its 10 sponsors before it could hope for a fair future. This was assured at the Milan summit.

Europe is progressing in fits and starts. Remember the last summits, that of Athens, for example. What was being said then? That we had to salvage what we could, the community's only real assets such as the joint agricultural policy, or the European monetary system. Europe was in decline. Since the French president's initiative, the balance has tipped in the other direction. Eureka is an incontestable European success. What are the reasons for this? First of all, because industrialists believe in it. I cannot remember who it was who said that their outlook had changed over the last few months; they have finally understood that Europe is their market. And because the governments have begun to believe in the community again. Even Margaret Thatcher! Perhaps to avoid being accused by industrialists of slowing things down, of trying to put spokes in their wheels again.

As the new minister of industry in 1983, Laurent Fabius let it be known right off that he was a convinced pro-European. At the time, he deplored the lack of enthusiasm of the major industrial companies for collaborating with their partners on the old continent. Joint ventures, those associations between businesses to develop a specific project, were being carried out mainly with American or Japanese firms. And what was true for industry was also true for research. European researchers preferred to go and increase their knowledge across the Atlantic rather than across the Channel, showing little interest in what was happening beyond their immediate borders. Laurent Fabius said then that we were running the risk of becoming subcontractors for the United States and Japan. On the strategic level, this danger was becoming a threat: Europe was opening itself up to every kind of venture, he said. That ominous period seems to have passed.

In contrast with the strategic defense intiative (SDI), President Reagan's famous "star wars," Eureka is not a military project. But behind the high technology research it plans to do in electronics France's reply to SDI can be seen. Hence the German position. For Chancellor Kohl, "the FRG needs the United States as a guarantee of its security, and needs France to develop European integration." There is no possiblity that the Germans will refuse to participate in SDI whose estimated cost totals $26 billion, but neither is there any possibility that they will exclude themselves from the Eureka project. That is why, 48 hours before the Milan meeting, the German and French ministers for research, foreign affairs, and defense agreed to launch Eureka officially in Milan. Thus, the Paris-Bonn axis once again became the backbone of the European community. At a stroke, Milan seemed a cinch.

Another series of events was to push Eureka ahead. On Friday 21 June, exactly a week before Milan, in the presence of Hubert Curien, minister of research, Jean-Luc Lagardere, president of Matra, and his Norwegian counterpart of Norsk Data signed a cooperation agreement as part of the Eureka program. The task is to develop in 3 years a compact supercomputer for which at the present time, European research centers and universities are completely dependent on the Americans. The Norsk Data-Matra agreement will benefit from the openness of the European public markets. The following Tuesday, Thomson (France), Philips (Netherlands), Siemens (FRG) and GEC (Great Britain) signed an agreement in the area of microelectronics. The four European giants undertook to "examine the various aspects of cooperation envisaged within 6 months of a decision by the governments to launch the Eureka project."

Six months to see what there was to develop, how to do it, and who would finance it. But on condition that the governments would commit themselves to Eureka. It was a way of putting pressure on the Ten 3 days before Milan. At Thomson, they were

not hiding the fact: "In Milan, furthermore, we will publish a communique to invite other industrialists to join us." Knowing that within 5 years the power of electronic components has increased 100 times over and that Europe's trade balance in electronics showed a deficit of Fr 9 billion last year, the industrialists decided that it was imperative that they do something. Technologically, they are in no way behind the Pacific area: Philips is the world's largest producer of components and second in electronic goods sold to the general public; Thomson and GEC are respectively second and third in the world in electronic goods sold to the general public, and finally Siemens is Europe's leading producer of electronic medical equipment. What they lack is size; through the Eureka program, they want to mobilize the same amounts for research and development as the Americans and Japanese devote to them. As a standard of comparison, people often mention that IBM's research budget is equal to the entire turnover of Bull, France's number one in data processing.

The Chip of the Future

The four companies together will develop strategic components particularly for facilitating air and ground traffic control, space surveillance, and from space the automation of the means of production, the television of the future, and civilian and military applications. But Thomson and Siemens are already perfecting the chip of the future, the "Europrocessor," and as part of the Esprit program the four are continuing research on gallium arsenide circuits, a chemical constituent which makes it possible to integrate many more functions in less space.

Other agreements are in the air. Like Matra and Norsk Data, Bull and Siemens are working on a project in scientific calculation, but it will not be completed until the end of the 1980's. The French and the Italians are also considering cooperating on industrial lasers. Even before it was officially launched, Eureka was gaining ground. Industrialists adopted rapid implementation policies. Eureka, which was intended above all as a stimulus for the electronic industry, has already fulfilled part of its mission. Francois Mitterrand, who set things in motion, can be satisfied.

Nevertheless, Milan did not settle everything. The terms and features of the project can only be defined at the end of long studies by experts. On 17 and 18 July, a committee made up of two ministers from each of the community's countries will meet to deal with this question. It is also known that a new Europan technological standard will be defined, called the Eurotype or Eurekatype. But what will Eureka's organizational framework be? The French had thought of an agency; that aroused opposition especially on the German and British side. In fact, very little structure is wanted, quite the opposite of a ponderous and

budget devouring administration. The IDS is headed up by a single person. Financing is another problem: at Thomson, they are waiting to find out what level of self-financing will be granted to the various projects on the agenda of "the agreement of the four."

It seems that they are leaning towards a tripartite agreement. On the one hand, the companies would finance part of the actual projects in which they wanted to get involved. Other contributions would be made only as financial assistance for these projects. Priority is given to industrial agreements concerning specific programs. The governments would contribute funds from the budget of their research ministries. The figure of Fr 1 billion is often mentioned for France. Finally, the European community would make its own contribution. The British, moreover, have just raised the rates of their value added tax to increase their financing of the community budget.

This last point, however, raises another problem. The community in its own right has a technological development project of its own. Jacques Delors thinks it important. Moreover, he is contemplating increasing by 8 percent the funds contributed by the EEC for research and development. It seems obvious that Eureka risks duplicating this project. Especially since the French president's project detracts from the prerogatives of the president of Europe. For its part, Eureka is an extracommunity program. Were not the Norwegians of Norsk Data among the first to have concluded an agreement in the context of the Eureka program? Other countries are very interested; Roland Dumas, the French minister of foreign affairs, confirmed that four other countries, in addition to the Ten and Spain and Portugal, have been invited to the meeting of 17 and 18 July: Norway, Sweden, Switzerland, and Austria. Also interested in the project are the United States, Japan and even eastern countries like Bulgaria and the USSR.*

The Americans have already made offers to Thomson for its expertise in gallium arsenide. In fact, the United States do not want to be surpassed by the Europeans in technologies which the latter master better than they do. Since the Bourget salon meeting, the question of French participation in "star wars" has been clearly established. French firms can become involved on an individual basis in cooperating with American companies in those projects which interest them. For Matra and Thomson, matters are just as clear: "We do not see why we should reject American markets," these firms stated. All-out efforts are being made in

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*During last week's meeting in Paris between French and Soviet representatives, the latter showed an obvious interest in the Eureka project concerning which they asked to be provided with any useful details.

technological and commercial cooperation. At the moment, this is limited to electronics. But voices are already being raised in Europe asking that it be extended to other spheres such as biotechnology.

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TECHNOLOGY TRANSFER

BRIEFS

ITALTEL 'OBSERVERS' TO SILICON VALLEY -- San Jose -- Italtel has opened an office in San Jose, California, to keep tabs on the latest technological and marketing developments in semiconductors. This "observatory" focused on Silicon Valley will also help form and consolidate contacts between Italtel and the advanced technology powerhouses in the California area. Like other major telecommunications companies, Italtel is undergoing a profound technological transformation into electronics, which involves both its production processes and its products. Right now, 40 percent of the company's output is electronics. That percentage is destined to rise to 60 percent this year. It predicts that the value of the semiconductors it buys will rise by about ten times over the next 5 years. [Text] [Milan L'INFORMATICA in Italian Nov 84 p 8] 6182

ANSALDO'S SOVET CONTRACT--The Automatic Production Technologies Division of Ansaldo Components has been awarded a contract from the Soviet Avtopromimport agency for a flexible robotized production line that will cost more than 7 billion lire. Along with the line will go four robotized stations for automatic welding of self-adapting distributors and diaphragms.[Text][Milan L'INFORMATICA in Italian Feb 1985 p 4] 6182

OLIVETTI CO-OP AGREEMENT WITH SOVIETS--Olivetti and the Soviet Union have renewed a major global agreement calling for economic, technical, and scientific collaboration consistent with the new Soviet 5-Year Plan. The agreement was signed on 14 September in Moscow by the chairman of the Science and Technology Committee, Gvisciani and Olivetti's CEO, Carlo De Benedetti. De Benedetti , who went to the Soviet capital accompanied by a group of Olivetti officials, also met with ranking spokesmen for government agencies such as the Foreign Trade Minister, the Automation Minister, the Light Industry Minister, the Vnestorbank, and Sujusvenstro-Import. The talks revealed keen interest on the Soviet side at Olivetti's contributions in office-work automation and data processing systems as well as in factory automation through the experience and expertise of Olivetti Controllo Numerico. The Italian delegation and the Soviet authorities agreed to a series of technico-operative meetings in the next few months to look into and perhaps implement the proposed projects. [Text][Turin NOTIZIE OLIVETTI in Italian Jan 85 p 4] 6182

FIAT AGREEMENT WITH PRC--FIAT Iveco will supply plants, technology, and parts for light industrial vehicles for a factory China will build in Nanking, in the southeastern region of the country. The agreement includes granting licences and providing technology to produce vehicles of the Daily type. FIAT and Peking representatives reported that over the 10-year life of the contract the value of investments will come to about $260 million (about 550 billion lire). These investments will have some fallout on the inexperienced party, which will probably boost the value of the contract to around $450-500 million. Half of the $260 million or so in investments covers delivery of installations and the know-how of Iveco and its suppliers, while the other half will cover supplies of truck parts. This agreement is a major international statement on the part of FIAT Iveco, which has been battling fierce Japanese and American competition. The agreement with Iveco also calls for training in Italy for Chinese technicians working for Iveco in China, and technical support and consultation in establishing a vocational training center and development research center near the Nanking plant. [Text] [Turin ATA in Italian Apr 85 p 251] 6182

PHILIPS-CHINA FIBER OPTICS--Philips and China completed an important step toward long-term cooperation in the field of fiber optic transmission, the Dutch group announced on 22 July in Eindhoven (southern Netherlands). A first agreement to that effect was signed by Philips and the Chinese ministry of Post and Telecommunications last week in Peking, a communique from the group added. According to the communique, cooperation will involve several tens of millions of guilders and will concern the Dutch Cable Manufactures (NKF, a Philips subsidiary) and the U.S. group AT&T. It will include deliveries of optical fibers, optical fiber cables and transmission equipment, as well as the knowhow required to manufacture these products locally based on methods developed by Philips, and possibly the creation of joint companies. According to the communique, the first agreement provides for a joint study of the form that cooperation should take and the time that it will require. Several Chinese delegations will visit Philips operations in August and September. The two partners are contemplating a full agreement toward the end of 1985, Philips concluded. [Text] [Paris AFP SCIENCES in French 25 Jul 85 pp 25-26] 9294

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